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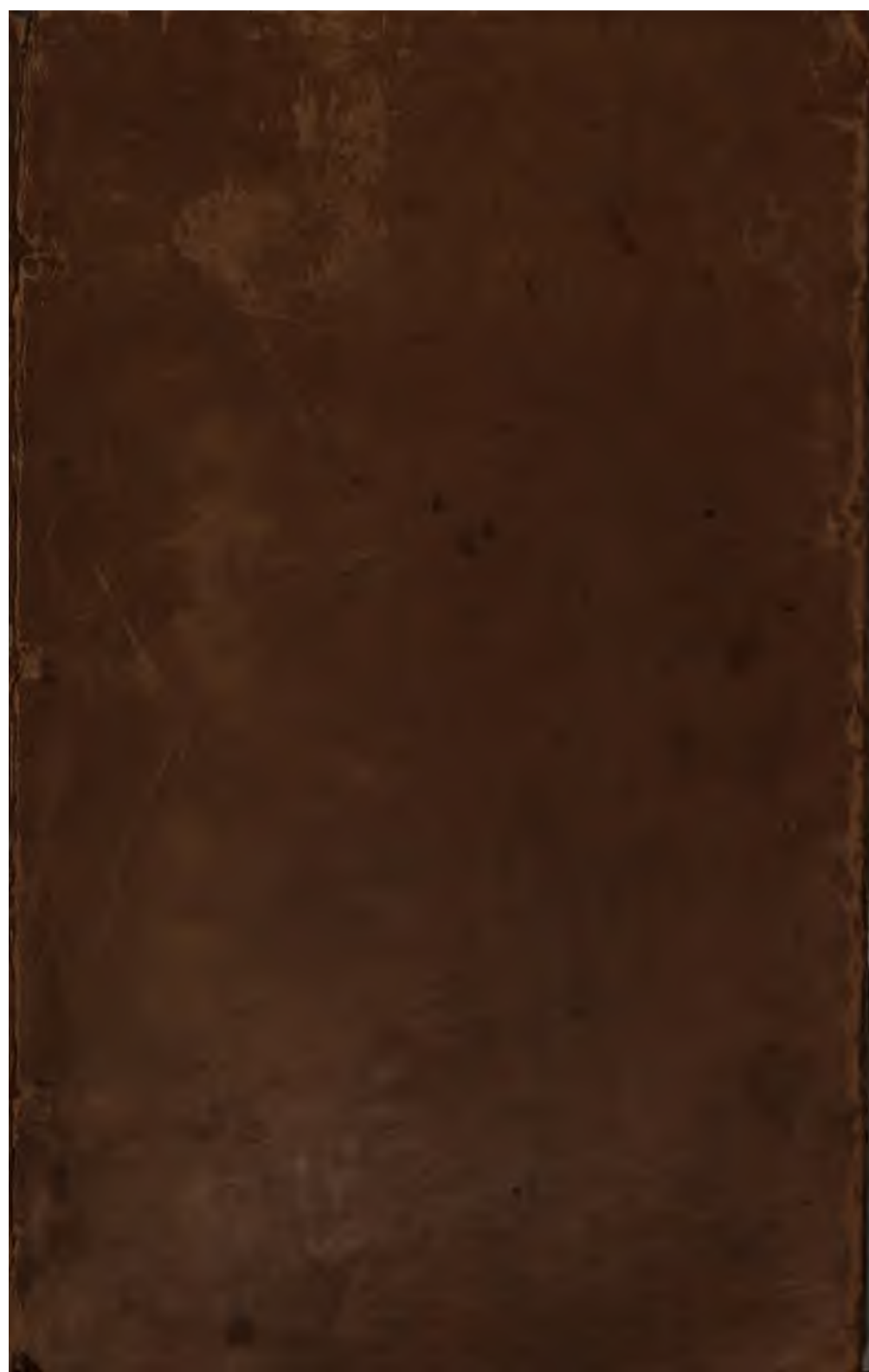
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Handwritten text at the bottom of the page, possibly a signature or a date.

To the Right Honorable
Sir Fletcher Norton, Knt.

ye . ye . ye .

this Volume is humbly presented
by the Author.



AN
E S S A Y
ON THE
NATURE, CAUSES, and CURE
OF THE
CONTAGIOUS DISTEMPER
AMONG THE
H O R N E D C A T T L E
in these KINGDOMS.

By DANIEL PETER LAYARD, M.D.
Member of the Royal College of Physicians in LONDON,
and of the Royal Society.

*Da facilem cursum, atque audacibus annue cœptis:
Ignarosque viæ mecum miseratus agrestes
Ingredere: ac votis jam nunc affueſce vocari.*

VIRG. Georg. lib. i. ver. 49.

L O N D O N:
Printed for JOHN RIVINGTON, in St. Paul's Church-
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MDCCLVII.

167 . . 100 . .



To the Right Honourable

JOHN Earl GRANVILLE,

Lord President of His Majesty's Most
Honourable Privy Council.

MY LORD,

YOU are so justly intitled to
the first tender of an Essay
of this sort, from the high place
you fill in his Majesty's most
honourable Privy Council, that
whatever presumption there may
appear to be, in making it with-
out your Lordship's express per-
mission, I may flatter myself, I
cannot easily be censured for the
impropriety of this address. Be-
sides, my Lord, I look upon it
as a debt, not less due to the
particular turn of mind you are
possessed of, than the station

A 2 you

iv D E D I C A T I O N.

you are placed in: and I feel the greater satisfaction in discharging it, as my views therein are of the most public and disinterested nature.

The subject has not been thought unworthy of the royal attention, the consideration of the Privy Council, nor the deliberation of the Parliament itself. Orders, laws, and rewards, have been repeatedly made, enacted, and distributed, from time to time, for the preservation of the cattle, and consequently the support of the people. To whom, therefore, could I more properly have submitted this Essay than to your Lordship, who, in the most distinguished manner, eminently preside over his
Ma-

DEDICATION. v

Majesty's most honourable Privy Council, have assisted at all the deliberations on this subject, and doubtless had no small share in the direction of those wise regulations issued on the occasion.

The ROMANS deservedly applauded, and transmitted to posterity, the shining virtues of their senators.---The annals of BRITAIN, in justice to our's, will record to future ages the excellent qualities which adorned them.

CATO could quit the ROMAN senate, and in his country-retirement amuse himself with agriculture and husbandry.--And you, my Lord, when the more important business of your station will permit, can forgo the delights of a scene in which you can't but

vi D E D I C A T I O N.

reap applause, for the calmer recreations of solitude. It is here, in truth, that we view creation, if not in the fullest, at least in the steadiest light; and whatever the munificence of heaven exhibits, as its different scenes are shifted, your Lordship is at all times qualified, from the happiest disposition of mind, at once to relish its beauties and discern its worth.

CATO's rules were designed for the advantage of the ROMANS.--You, my Lord, would secure plenty and happiness to the ENGLISH. I am, with the greatest Deference and Respect,

MY LORD,

Your Lordship's most humble

and most obedient Servant,

Huntingdon,
Jan. 31, 1757.

DANIEL PETER LAYARD.

THE
P R E F A C E.

WHEN the distemper among the horned cattle first broke out in *London*, in the year 1744, I lived at too great a distance from any herds to get knowledge of it, either by observing the course of the disease, or inspecting the dead carcases. The various and contradictory accounts published, the medicines prescribed by different gentlemen, with intentions visibly opposite, made me believe one side must be mistaken, and that those gentlemen had not all the advantages for observation, nor clear informations, requisite to fix their opinion.

nion. Fully persuaded of this, I thought no more about it; till in FEBRUARY last, 1756, the distemper broke out in a neighbouring town, called GODMANCHESTER, wherein are two considerable herds of cattle. Hearing the distress of some of my neighbours, and that, unwilling to kill their beasts, they took their chance as to the disease; I begged leave, for my own satisfaction, to see some carcasses opened immediately after death.

A considerable farmer granted my request, and I saw four opened, of which I give an account in the chapter on dissections. By examining the farmer, and his servants, I obtained a rational description from them, in what manner the cattle seemed first affected, what they observed in the course of the illness, and the event. The farmer assured me, that this disease was at this time exactly the same with that which visited the whole town ten years before, and that whatever they tried
I had

had no effect; few recovered by medicine, or without: but he observed in general, that such as were bled much or purged, never recovered. For want of proper authors on the subject, I, having none by me, took some little time to fix my notions of practice, by means of the observations I had made on the distempered cattle, a comparative view of morbid carcasses, and of sound ones in the slaughter-house; and likewise by the analogy there appeared to be between putrid fevers in the human body, and this epidemical contagion among the cattle.

How far I succeeded in my attempt, and what were the consequences of my directions, is well known in the neighbourhood.

Mr. M---- had lost already ten head of cattle, two more were dying, and seven others ill, when I first took upon me the direction of the *seven* which were last fallen ill. Of these *five* recovered: one cow, very near her time
of

of calving, died; and the *seventh* was certainly lost, for want of observing the due time of the *crisis*, and her purging too soon. * But the loss of this cow may prove the saving of thousands; for, by this single failure, I was convinced, how regular this distemper is in its course. Some calves were afterwards treated in the like manner, and did well.

Thus far I went on, without the least assistance or advice, either from authors or practitioners: I now grew desirous of reading, what I could collect written on this subject. VIRGIL, in his *Georgics*, had hitherto been the only evidence I could produce, of such a distemper breaking out in ITALY. RAMMAZINI and LANCISI have since confirmed the same. From the year 1744 to the end of 1755, the *Gentleman's Magazine* affords various accounts from different hands, and abounds with numberless receipts;

* See the chapter of Observations.

whether well or ill adapted, let the success of them determine. Indeed, where timely and properly given, I believe, several may have proved efficacious; while others could at no time, nor in any shape, prove useful. Yet the authors of them all are undoubtedly praise-worthy, for their generous endeavours towards promoting the public good.

CATO, VARRO, and COLUMELLA, who all wrote *De re Rustica*, seem by their directions, both as to the care and cure of the horned cattle when ill, to have been well acquainted with their distempers. The remedies they have transmitted to posterity, are not to be despised.

I cannot learn that, to this day, any one has published a distinct and regular account of this dreadful calamity; since, therefore, abler hands, through want of opportunity, or being better and more usefully employed, for the benefit of society, have been hindered from

from executing this task, tho' very little desirous of becoming an author, yet I should think myself highly culpable in with-holding such observations as might turn to the advantage of the present community, or furnish posterity with hints to improve upon.

This essay consists of my own observations, strengthened by the opinions of ancient and modern writers. It is divided into chapters, for the sake of perspicuity.

The Introduction points out the reasons why a regular method of treating this contagious distemper has not been observed, and the motives which induced me to investigate the progress of the sickness, and endeavour at fixing a rational method of cure.

The first chapter, from the authority of ancient and modern history, traces the origin of this disease, attempts to prove the contagious quality, and in what manner it was brought
over

P R E F A C E. xiii

over to us, and propagated in the BRITISH dominions, shewing the analogy it bears to the small-pox.

The second chapter treats of the symptoms. And here it is much against my will, that I am obliged to contradict Dr. BROCKLESBY, who, in his essay on the mortality of the cattle, p. 32, printed in 1746, says, that *all that had not the looseness before the third day died*. As this gentleman is the only author, or observer, that found the scowering a favourable symptom, while all others were and are convinced it is the most fatal that could befall the cattle; I must presume, that either the Doctor visited cattle ill of some other distemper, or, if his opinion was grounded upon the relation of others, that he was greatly imposed upon. Dr. MORTIMER positively declares, that the few among the cattle which have recovered, did not purge, or but little *. LANCISI, the

* See Gent. Magaz. vol. xvi. p. 652, containing Dr. MORTIMER's account read before the royal society, Dec. 21, 1745.

most

most accurate author on this distemper, openly declares against purging †. Experience has sufficiently proved, that these authors were not mistaken.

The third chapter indicates, first, what sort or colour, age and sex, among the cattle, are the strongest or weakest; and, of course, more or less exposed to the ill effects of the contagious distemper. Secondly, the season in which this disease spreads most. Thirdly, the signs whereby a recovery and favourable issue may be expected. And lastly, such signs as plainly foretell the death of the beast.

The fourth chapter contains an anatomical inquiry into the particular structure of the horned cattle, gives a comparative view of both the sound and morbid state the cattle are found in; and from the examination of the carcasses, especially of the admirable formation of the several stomachs, the first impression of the contagious ef-

† LANCIST de bovilla peste, part. iii. p. 156.

fluvia,

flom

fluvia, the progress and effects of the disease are traced; and reasons are assigned for the inutility, inefficacy, and danger, attending the administration of vomits and rough purges.

The fifth chapter shews the chief methods of cure, which have been recommended, and have failed of success, with remarks on such medicines or operations directed, and why they must have been improper in most cases, and frequently detrimental. Then is subjoined the method of cure, which was attended with the most favourable consequences, and proved effectual, in saving the lives of those beasts on whom it was regularly practised. Directions are laid down for the management of the cattle, from the first infection; the medicines to be administered are put down in the plainest, cheapest, and easiest manner, adapted both to the comprehension and purse of every grazier and farmer. But should any farther explanation or

direc-

direction be necessary, I make no doubt, that their humane and charitable apothecary, of whom they buy their drugs, will kindly lend his assistance, by giving his neighbours the best information he is able. Besides the remedies, proper in the whole course of the distemper, such are also directed, and a method recommended, for the cure of such disorders, as frequently succeed the disease, especially when it has been ill managed.

In warmer climates, as ITALY and FRANCE, the medicines have been given, and are directed to be mixed up with wine; but considering the difference of climate, that in our's there is less perspiration than in those southern parts, and that small ale will answer all the purposes for our horned cattle, that their weak wine is calculated for;--I have preferred what was more natural, at hand, and cheapest for my countrymen to buy for their beasts. Tho' the acid of verjuice, either from grapes or crab-apples, may
be

P R E F A C E. xvii

be good and useful, particularly in the first stage, or inflammatory state of the disease ; yet as I did not make use of it, but kept intirely to the use of white wine-vinegar, without discommending the verjuice, I have only recommended the vinegar.

The sixth chapter includes observations made on all the cattle I attended, with an account of the success, whether good or bad, that resulted from the manner of treating those distempered beasts. Some notice is also taken of the pernicious effects of *opium*, or any of its preparations, in putrid fevers of all sorts.

I shall here add an account of the cattle which died, or were recovered, as I received it from my neighbour Mr. M-----.

a

Died

xviii P R E F A C E.

Died before I visited the cattle,	10
Dying when I went there,	2
Of the first seven I directed for,	} 2
died - - - - -	
One brindled cow with calf, died,	1
One calf, who took no other me-	} 1
dicine but GODFREY'S Cordial,	
	16

Recovered of the first seven I di-	} 5
rected for, as mentioned in the	
chapter of Observations, - -	
Two which slipt their calves after	} 2
the above, - - - - -	
One bull, - - - - -	1
One black cow, - - - - -	1
Yearling calves - - - - -	6
	15

N. B. The bull was but slightly infected, and required little attendance.

The seventh chapter, after relating in a cursory manner the great advantages

P R E F A C E. xix

tages of inoculation in general, points out the time proper to perform it, a method of preparation, the place and manner of performing the operation, together with the management to be observed.

I wish, in recommendation of this beneficial practice, I could add some observations of my own, made on the cattle; not but the authority of the worthy persons mentioned in this chapter, is proof sufficient to confirm the great use of inoculation; yet it would have given me pleasure to have added to such testimony; but opportunity has not offered, for my seeing any cattle inoculated. From the authority of others, and my own experience, what benefit inoculation is of to mankind, I think it by no means a practice to be neglected, in the case of the contagious distemper among the cattle.

The eighth and last chapter is designed to prevent the admission and
a 2 spread-

xx P R E F A C E.

spreading of this dreadful distemper in the BRITISH islands, in which, thank GOD, it is considerably abated; and only breaks out now and then in such places, where, for want of proper cleansing after the infection, or carelessness in burying the carcases, the putrid *fomes* is still preserved, and is ready, at a proper constitution of the air, or upon being uncovered, to disperse such a quantity of *effluvia*, that all the cattle, which have not had it, will be liable to infection.

Care and time may extirpate the disease; at least, such devastation as has happened of late years may be prevented. But, of all cautions, prohibiting the importation of infected cattle and hides is of the greatest importance; since, for want of due attention, this distemper may repeatedly be introduced.

I would not, in the course of this chapter, be understood as contradicting and disobeying the laws of the
realm,

realm, by encouraging the care and treatment of distempered cattle, instead of killing them the instant they were taken ill; nor by preferring the burying of the carcasses without cutting or flaying the hides. It is the happiness of an ENGLISHMAN, under the best constitution and government, that he may offer his reasons for the public good, tho' different from the rules established, provided his sentiments are delivered with deference and respect. I would, therefore, avoid giving any offence; and, I flatter myself, none can be taken, if such methods be pointed out, which tend to the preservation instead of the destruction of the cattle; and to confine the putrid matter, instead of letting it loose to spread the infection.

Neither a vain parade of learning, nor an ostentatious show of reading, have drawn from me the several quotations interspersed in this essay. Vouchers were necessary to corroborate

rate what I assert, and I chose to give the author's own words, and pay a due regard to every learned author whose assistance I am beholden to.

All I mean by this attempt, is to be useful to my countrymen: if I should be mistaken in any thing I have advanced, I am ready to retract, and change my opinion for one of greater use. I only desire Mr. POPE's rule may be observed:

*In every work regard the writer's end,
Not free from faults, nor yet too vain
to mend.*

Essay on Criticism.

And should this imperfect performance, for want of a better, prove recommendable to society by the hints I have given, I shall always reflect with great pleasure, that I have endeavoured to contribute my mite towards the benefit of mankind.

T H E

THE
CONTENTS.

The Introduction, Page 1

CHAP. I.

*Of the origin, nature, and causes of
the contagious distemper,* 9

CHAP. II.

Of the diagnostics, or symptoms, 24

CHAP. III.

Of the prognostics, 27

CHAP. IV.

Of the dissections, 36

CHAP.

C O N T E N T S.

C H A P. V.

Of the method of cure, 60

C H A P. VI.

Observations, 86

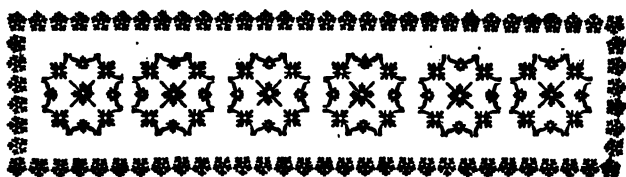
C H A P. VII.

Of inoculation, 100

C H A P. VIII.

Of the means to prevent the infection, III

INTRO-



INTRODUCTION.



O discover and account for the nature of the distemper among the horned cattle, after it has raged so many years in different parts of EUROPE, and moreover to ascertain a method of cure, appears at this time as difficult and unpromising a task, as it was of old to untie the gordian knot. Yet the opinions and directions of those learned physicians * RAMMAZINI and LANCISI, published in 1711 and 1715, the observations of other physicians of a still later date †, with those of other persons, all afford us some ground to expect, that this distemper may be traced through its several stages; consequently, that a rational account of its nature, progress, and means of cure, may also be given, together with proper cautions to avoid the spreading of this dreadful calamity: authorities sufficient, I hope, to clear this essay from the least imputation of presumption.

* Sed omnium phaenomenorum exactam rationem adferre velle, non patitur unius horae ambitus: ampla enim materia suppeteret ad integrum tractatum conscribendum. RAMMAZINI De Contagiosa Boum Epidemia, p. 458.

† Lond. Mag. 1745, p. 568 and 598.

2 INTRODUCTION.

Indeed, if the many obstacles that have occurred were calmly considered, every one would be amazed even at the small benefit which society has received from the different and repeated investigations of physicians, and the observations also of others; the public may well wonder at seeing such numerous herds of cattle brought to market, when no fixed method of cure has yet been recommended by sufficient success, so as to have it generally followed. For the increase of our herds, and their healthy state, we therefore are solely indebted to all-bountiful Providence, without the least, nay, even prudential, care from our farmers and graziers. But, yet, these are not altogether to be blamed. No sooner did this distemper make its appearance, than the legislature, alarmed, gave the wisest and most salutary orders and regulations, for preventing its spreading: physicians were directed to give their opinions and directions, after due inspection of the carcases, examination of the sick, and receiving such accounts and relations as the farmers, cowkeepers, &c. could furnish them with.

What was the consequence of this well-intended inquiry? The farmers and graziers reasonably expected a satisfactory description of the disease, and a cheap method of cure *;

* Neque enim credunt posse eum scire quomodo morbos curare conveniat, qui unde hi sint, ignoret. CELSUS in Præfatione.

but

INTRODUCTION. 3

but finding themselves disappointed in what they had promised themselves, with regard to the former, they paid little attention to what was offered with a view to the latter. In both, the physicians did not agree. Without raking up the ashes of the dead, to point out their *foibles* while living, I shall be content with saying, that some affirmed the disease to be an inflammatory fever, without the least infectious quality †: some, that it was a peripneumony; others, a bilious fever, arising from obstructions in the liver and gall-bladder: while those who were more conveniently situated, had perhaps more leisure, or gave themselves time to reflect before they set forth their observations, and then wrote nothing but what they saw; these ‡ physicians, and others, gave solid reasons for their directions; they were frequently successful. The farmers tried their method; but it did not always succeed. Bleeding, purging, bark, &c. tho' all good, when properly and in due time administered, became destructive or useless in another stage of the disease. Disappointed thus far in their hopes, from regular practitioners in physic; no doubt because, thro' ignorance or inattention, the farmers had not furnished those gentlemen with sufficient and constant relations of the symptoms; they despised all

† See Gent. Mag. vol. xvi. p. 649 and 686.—vol. xvii. p. 30.

‡ See London Mag. for Nov. 1745, p. 568 and 598.

4 INTRODUCTION.

regular methods, and run headlong after such remedies as, at once, were to remove every complaint, and were honoured by the authors with the ever recommending title of *Infallible*. Nor were these remedies more efficacious.

* Tar-water, Bateman's Drops, Godfrey's Cordial, Worm-powders, and others, were all equally given, and to as little purpose; till, bewildered in a labyrinth of opinions, and distracted thro' their absurd credulity, they became as superstitious in this case for their beasts, as fatalists are with regard to themselves. They would only bleed, and give milk-pottage, because they deemed them innocent; and when, by loss of blood or scouring, the cattle died, they left the whole to providence, *they said*; but more properly to the course of the distemper: if they were cured, *they say* it was WELL; if they died, *they said, no one knew any thing of the matter, nor could any thing have done them good.*

Præterea nec jam mutari pabula refert,

Quæstæque nocent artes: cessere magistri †.

Nor change of pasture could relief impart;
Destructive proves each vain attempt of art:

.....
Fathers of medicine *can heal* no more †.

* See Gent. Mag. vol. xvii. p. 65, where the BISHOP of CLOYNE, in a letter to the learned DR. HALES, wishes he could introduce the general use of tar-water for this murrain.

† VIRGIL. Georg. lib. iii. ver. 547.

‡ WARTON's translation.

INTRODUCTION. 5

No wonder that opportunities of investigating this calamity grew daily less frequent. Seeing no abatement or relief, the governing power issued out orders, wisely calculated to stop the progress, by killing the beasts immediately upon the first signs of infection *. The physicians broke up their meetings, in obedience to the orders of council. A visible decrease of the cattle, and some reasons to apprehend that persons had killed cattle sick of other diseases, for the sake of the reward, induced the legislature, to avoid all future impositions, by giving no longer a bounty.

There are not wanting, in all ranks of persons, many who wish to have a rational account of this direful contagion, and a fixed method of cure recommended. With a view to so beneficial an end is this essay drawn up ; but I beg leave to assure them, that in vain will any man expect to cure this pestilential disease by any one single medicine, let it be never so well compounded or adapted. *Panacea*, specifics, infallible, or universal medicines, can neither be allowed of, nor are they now-adays trusted to, nor relied upon. RAMMAZINI † tells us, in this very case, “ That as long as we have not a specific and particular
“ medi-

* See London Magazine for Dec. 1745, p. 598.

† In id unum incumbendum esse, persuasum habeo, ut per universalia pharmaca (quando particulare & specificum hujus veneni remedium non habemus) miasma istud pestiferum extinguatur, aut saltem enervetur, ut

6 INTRODUCTION.

“ medicine, wherewith to cure this poisonous
“ distemper, we are to make use of remedies
“ which destroy the venomous quality, or
“ decrease the strength of the pestiferous
“ *fomes* to such a degree, that nature may
“ recover its strength, and throw it out at the
“ surface of the skin; since by the ulcers,
“ pustules, and boils, which have made their
“ appearance in such as have recovered, na-
“ ture seems to have pointed out a method to
“ us of proceeding with those that have not:”
and, indeed, to have furnished hereby a plain
indication that she follows the same regularity
in this, as in other contagious and critical
distempers.

There are two considerations which ought
to have great weight in an inquiry of this kind,
and promise that our researches will not prove
fruitless.

The first arises from the brute subject in-
fected, whose blood can only be vitiated by
bad food, corrupted water, or violent driving *,
except in the case of contagion; for though
we too frequently destroy the human frame

*natura roborata illud ad cutis ambitum ablegat atque ex-
trudat, quando per ulcera, pustula, & tubercula in iis
bobus qui evasere sponte excitata ipsamet natura, nobis in-
digitavit qua via fit incedendum. RAMM. p. 460.*

*Nullo autem tempore & minime ætate utile est boves in
cursum concitari; nam ea res aut cit alvum, aut movet fe-
brum. L. JUN. MODERAT. COLUMELLA De Re Rustica,
lib. vi. cap. 5. & ALDROVANDUS de Quadrupedibus bisul-
cis, lib. i. pag. 80.

by

INTRODUCTION. 7

by intemperance, riot, and debauchery; our blood and humours become tainted, our fibres relaxed: enervated nature must bend, nay yield, to the attacks of a putrid or pestilential venom, notwithstanding all human art; yet with some assistance the cattle generally recover. Such is the advantage of obeying the laws of nature only. They give us signs of their illness by the refusal of their food, their drink, and their inability for exercise or work. What can occasion this refusal of their fodder, if they have not been over-drove? What their difficulty of swallowing their drink, their shiverings, debility, and fever? Will it not appear, by these symptoms, that a putrid matter infects the whole mass of blood, tho' it generally falls more severely on some particular parts?—This will be demonstrated in the chapter on dissections.

Therefore no sooner do the symptoms point out the disease, but they also point out the method of treating it, according to its several stages.

The second consideration, and of no less advantage, is, that these creatures being ignorant of the consequences of any disease, nature is neither obstructed nor disturbed by the violent passions of a turbulent or dejected mind*. Provided the keeper permits the beast to be at quiet, and does not administer an improper

* SANCTORII Aphorism. sect. vii. De Anim. Affectibus.

8 INTRODUCTION.

medicine, nature may go on in her course; and, if the creature be slightly infected, work out a cure without assistance.

Such instances the small-pox affords daily in the human species. There is such an analogy between these two contagious distempers, that there would be the same reason to neglect the attendance on all persons under the small-pox, because some have it so slightly as never to keep within, as there would be not to attend the distempered cattle, because some recover without the least attention. Nature, therefore, if not obstructed, sometimes *without*, but generally *with*, the assistance of art, will restore these distempered creatures, at the regular period of the disease; since they are not subject to intemperance, nor the affrighting passions of the mind *, which *might* protract the distemper, or render it more destructive †.

* Les animaux au contraire, dont la nature est simple & purement materielle ne ressentent ni combats interieurs, ni opposition, ni trouble; ils n'ont ni nos regrets, ni nos remords, ni nos esperances in nos craintes. Discours sur la Nature des Animaux, Hist. Naturelle, par Mess. de BUFFON & d'AUBENTON, tom. iv. p. 77.

On peut le prouver par des exemples familiers non seulement ces animaux ne savent pas ce qui doit arriver, mais ils ignorent même ce qui est arrivé, &c. Ibid. p. 108.

† BAKER Dissertatio de Affectibus Animi, p. 15, 16, &c.

C H A P.

C H A P. I.

Of the Origin, Nature, and Causes of
the contagious Distemper.

ANcient history, both sacred and profane, furnish us with accounts of pestilential diseases among the horned cattle. One of the forest plagues which God inflicted on the obdurate king of Egypt, near 1600 years before Christ, was the destruction of all the Egyptian cattle in the field, either by a murrain, or by *boils and blains* *.

In the days of ROMULUS a great plague, after destroying the fruits of the earth and the cattle, swept off many of the ROMANS and LAURENTES, says PLUTARCH: to which † LIVY adds, “ That the consuls had the
“ greater difficulty to raise their recruits, be-
“ cause the plague, which the year before
“ had raged among the horned cattle, was
“ then broke out upon men.”

* Exodus ix. ver. 3, 6, 9.

† Delectus consulibus eo difficilior erat, quod pestilentia quæ priori anno in boves ingruerat, eo verterat in hominum morbos. LIV. lib xli.

10 *Of the contagious Distemper*

PLUTARCH in his life of NUMA, and || LIVY yet more fully, relate, that in the year 355, of the Roman æra, there was such a plague over all sorts of animals, that neither the cause nor cure being discovered, processions, offerings, and supplications were made in ROME, during eight days, to the pagan gods, to appease their wrath, and avert the disease.

* COLUMELLA, one of the first writers on agriculture, gives the earliest account of distempers among the cattle. The *malis* described by † GESNER and ‡ ALDROVANDUS, bears a great resemblance to the disease now in England, especially that sort of *μάλις* termed ὑποδερματίτις.

The severest plague of this kind appeared in the year of our Lord 810, when not only every head of cattle was destroyed in the emperor CHARLEMAIN's army, but also throughout all his dominions. This § LANCISI informs us from the German annals of METZ, those of TUSCANY and EGINARDUS. He also quotes FRACASTORIUS and WEIERUS, who both saw the same disease. Add to these, ¶ RAMMAZINI his account of this distemper in the Venetian state, anno 1514 and 1599; taken, the first from FRACASTORIUS, the lat-

|| LIV. lib. v.

* COLUMELLA de Re Rustica, lib. vi.

† GESNER, lib. i. De Quadruped. cap. 43.

‡ ALDROVANDUS De Quadruped. bisulc. lib. i. cap. i.

§ LANCISI De Bovilla peste, part. iii. p. 110.

¶ RAMMAZINI, p. 456.

ter

among the Horned Cattle. 11

ter from the registers of the shambles at PADUA, when all beef and veal, and likewise milk, were forbidden by the senate to be eat throughout their state.

Thus far the authorities are indisputable, and, except the following miracle, the subsequent may be as good; but, notwithstanding the assertion of a cardinal, I believe only such as have an implicit faith will trust to it. Cardinal BARONIUS says, that in the year 376, when the cattle died of the plague all over EUROPE, *none escaped but such as were marked on the forehead with the sign of the Cross, by which miracle many people were converted to Christianity.*

The Italian physicians of this century are silent as to any such miracle in their time.

Of late years the distemper has been regularly traced in EUROPE. || RAMMAZINI and LANCISI both declare, it was brought, anno 1711, from HUNGARY by sea through DALMATIA into the neighbourhood of PADUA, by means of a bull or an ox, which was put into the grounds belonging to the rev. count TRAJAN BORROMÆUS, canon of PADUA. It spread all over the VENETIAN state, ravaged all ITALY, particularly the MILANESE and the FERRARESE: thence, in 1713, it appeared in the kingdom of NAPLES, and extended itself through the country about ROME to ROME,

|| RAMMAZINI, LANCISI, loc. cit.

by

12 *Of the contagious Distemper*

by the avarice of the merchants. * It then passed through the TYROLESE into GERMANY, FRANCE, FLANDERS, HOLLAND, GREAT BRITAIN, and also into DENMARK.

The distemper, which has made such havoc and still rages among the cattle, not only in some parts of this kingdom, but also in GERMANY, and most of the northern parts of EUROPE, broke out afresh in ENGLAND about eleven or twelve years ago. The progress of it has been traced through the same countries that the former passed, which broke out in 1711 and 1713. It is recorded by Dr. MORTIMER, § that Mr. THEOBALD observed, “ The first infection of this dreadful calamity among the cow-kind, was brought over from Holland in 1745, by means of two white calves which a farmer at POPLAR near LONDON sent for, in order to mix the breed; that it spread into BERKSHIRE by two cows brought out of ESSEX; and that in the clothes of such persons as attended the sick cows, there was observed a disagreeable smell.”

Others assure us, that the lucrative views of an English tanner, who bought a parcel of distempered hides in ZEALAND very cheap, because they were forbid to be sold there, and should have been buried, transplanted this dreadful disease among us. Thus by one

* RAMMAZINI, LANCISI, loc. cit.

§ Gent. Magaz. vol. xvii. p. 55.

among the Horned Cattle. 13

man's unlawful gain, (if by this way it was conveyed) the ruin of many graziers and farmers was effected.

Though I cannot pretend to vouch for the truth of these relations, yet it is more than probable this distemper was propagated by some such means.

In the beginning of the late king's reign, a disease of this kind is said to have been fatal to the horned cattle, and proper regulations were made: since that time no such *epidemical* illness was observed in these kingdoms, and although many causes may concur to heat their blood, render it putrid, and bring on fevers of a malignant nature; such as the change of the seasons, the variations of the air, over-heating the beasts by driving, bad food, worse pastures in low and marshy grounds, drinking stagnating and stinking water full of living and dead insects, animal and vegetable particles in a corrupt state; yet all these combined together, tho' productive of many disorders, by their disposition to raise a ferment in the blood, never produced such a fatal and universal distemper as this.

The same countries which breed the plague and small-pox, seem to have propagated this contagion. The autumnal heats in ASIA or AFRICA, the putrid effluvia from the NILE, or from corrupted stagnating waters, are sufficient to contaminate the blood and juices of the cattle.

16 *Of the contagious Distemper*

who told me, that all the cattle about him were infected, while his remained perfectly sound; but about a year after he lost half his stock by the contagious disease: it then stopt, and did not spread to his neighbours.

This disease is peculiar to the horned cattle, and, like that which in † 1710, or 1711, proved so destructive to the sheep in ENGLAND, neither infects men, nor communicates itself to any other part of the brute creation. I have seen sheep, hogs, young pigs, horses and dogs, in the midst of the infection, without being the least affected by it. From which observation I infer, it is a pestilential fever, *sui generis*, to which horned cattle are alone subject §.

And herein I have the authority of the learned Dr. MEAD||; who tells us, “he is well aware that there are *plagues* among animals, which do not indifferently affect all kinds of them, some being confined to a particular *species* (like the disease of the *black cattle* here, a few years since, which neither proved infectious to other brutes, nor to men.”)

‡ The great father of physic has explained the reason why pestilential diseases confine themselves often to a peculiar *species* of ani-

† FULLER'S Exanthematologia, p. 168.

§ SENNERTI Opera, tom. iii. lib. vi. p. 3 & 4.

|| MEAD on the Plague, p. 88.

‡ HIPPOCRAT. De flatibus.

mals.

mals. After laying it down as a rule, that all distempers are communicated by the air, he distinguishes two sorts of fevers; one of which is general, sparing no body, and called by him *λοιμος*, *pestis*, or a pestilential fever. The other a particular one, seizing only individuals, and arising from some error in diet. Yet air, says he, is the author or parent of both *.

* Quumque animadvertas, tam vastæ semina labis,
Esse nec in terræ gremio, nec in æquore posse,
Haud dubiè tecum statuas, reputesque necesse est,
Principium sedemque mali consistere in ipso
Aère, qui terras circum diffunditur omnes;
Qui nobis sese insinuat per corpora ubique,
Suetus & has generi viventium immittere pestes.
Aër quippe pater rerum est & originis auctor.
Idem sæpe graves morbos mortalibus affert,
Multimodè natus tabescere corpora molli,
Et facile affectus capere, atque inferre receptos.

FRACASTOR. Syphil.

These seeds of dread contagion cannot lie,
Or in the earth, or sea, or starry sky;
Which point well weigh'd, their vehicle we place
In air, that fills the vast ætherial space;
Pervades thro' all this wide extended scene,
Thro' worlds, thro' plants, thro' animals, and men:
To this their spring the vital powers owe,
Hence ills unnumber'd, and diseases flow;
Hence burning fevers rage with mortal flame,
Or languid hectics waste the tender frame:
The passive air each baneful steam receives,
Spreads wide the vapour, and th' infection gives:
By healthful gales, or pestilential breath,
At once the source of life, and cause of death.

C

Then

18 *Of the contagious Distemper*

Then adds the venerable old man *,
 " Therefore this general fever seizeth almost
 " all those who breathe the same air, and the
 " same fevers will arise alike in those bodies
 " wherein the same air has been admitted."
 " Perchance, resumes he, some one may ask,
 " why these diseases do not affect all animals
 " in the same manner, but confine themselves
 " to some particular sort? This is the reason;
 " because in their bodies, their nature, and
 " their food, they differ from each other.
 " Neither are all things equally proper or im-
 " proper to every *species* of living creatures :

* Ο μὲν δυν κοινὸς πυρετὸς, διὰ τοιούτοις τοιούτος ἐστίν, ὅτι τὸ πνεῦμα τούτο πάντες ἐλκουσιν, ὁμοίῳ δὲ ὁμοίως τὸ πνεύματος τῷ σωματί μιχθέντος, ὁμοίοι καὶ οἱ πυρετοὶ γίνονται. Ἀλλ' ἴσως φήσει τίς· διὰ τί δυν ἅπασιν τοῖσι ζώοις, ἀλλ' ἔθνεϊ τινὶ αὐτῶν ἐμπερίπιπτοισιν αἱ τοιαῦται νόσοι; διότι, φαίνων ἂν, διασέρει σῶμα σῶματος, καὶ φύσις φύσις, καὶ τροφή τροφῆς. ἔ γάρ πᾶσι τοῖσιν ἔθνεσι τῶν ζῶων ταύτη οὐκ ἀνάρμοστα ἔτ' ἐνάρμοστα ἐστίν, ἀλλ' ἕτερα ἑτέροις ζύμωρα· ὁχλῶν μὲν δυν ὁ ἀήρ τοιούτοις πλησθῆναι μάσσει, ἢ τῇ ἀνθρώπινῃ φύσει πολέμια ἐστίν, ἂν θρωποὶ τότε νοσέουσιν. ὅταν δὲ ἕτερον τινὶ ἔθνεϊ ζῶων ὁ ἀήρ ἀνάρμος ᾖ, τὸ νόσημα κείνα νοσέουσιν.

ΙΠΠΟΚΡΑΤΗΣ, ΠΕΡΙ
 ΦΥΣΩΝ.

Communis igitur febris ideo communiter omnes invadit, quod eundem omnes spiritum attrahunt, & simili corpori spiritu similiter permixto, similes oriuntur febres. At forte objiciat quispiam, cur igitur non omnibus animantibus, sed alicui ipsorum generi ejusmodi morbi contingunt? Cujus rei causam esse dixerim, quod corpus a corpore, natura a natura, & alimentum ab alimento differt.

Neque enim cuivis animalium generi eadem sunt commoda aut incommoda, sed alia aliis conveniunt. Cum igitur aer inquinamenti hujusmodi, quæ hominum naturæ adversantur, plenus fuerit, tum homines ægrotant. Quando verò alteri quidam animalium generi aer incommodus fuerit, tunc eo morbo corripitur.

HIPPOCRATES a FOESIO Liber
 de Flatibus, tom. i. p. 297.

“ some

“ some are suitable to the one, some to others.
“ Whenever therefore the air is infected with
“ such particles as are obnoxious to human
“ nature, men will be sick : but when the air
“ contains particles hurtful to any other sort
“ of living creatures, they will be seized with
“ that disease.”

* LANCISI illustrates this opinion of HIPPOCRATES, by the following instances :
“ *Starlings* eat *Hemlock*, *Quails* eat *Hel-*
“ *lebre*, and *Thrushes* feed on *Cantbarides*,
“ without the least harm; whereas they are
“ poison to man, or any other living crea-
“ tures.” What constitutes the salubrity of
the air, but its fitness for the body which is to
receive it? Thus some breathe better in a thick
air, than in a keener one; and many instances
might be produced both of human and other
living creatures, who have been immediately
destroyed, or revived upon a change of air.
Should it be asked, why the pestilential
contagions that destroy animals spare man-
kind; when, on the contrary, the plague,
so fatal to men, sweeps off along with it all
the brute creation, and fowls of the air, with-
in its reach? I answer, that the juices of the
human body being by far more elaborated and
refined, than those of any other living crea-
tures under the sun, they also contract, when
vitiated, the highest degree of putrefaction,

* LANCISI de Bovilla peste, part. iii. c. 3.

20 *Of the contagious Distemper*

and, probably, being more subtle and active than those of other animals, is the reason why the latter are destroyed: while their putrid *effluvia* are only nauseous to us, without any deadly effect. No other ill consequence has appeared from the eating the flesh of distempered cattle, or using their milk, than might be expected from the daily practice of those who feed on putrid meat through choice: of course, such diet must supply the blood with putrid chyle, that, unless discharged by some emunctory, will raise a ferment †, possibly taint the whole mass of blood, and in time destroy the body.

It is obvious to every one, that this pestilential distemper, though confined to the horned cattle, is still of terrible consequences to human society. It answers, by the destruction of so many beasts, to the ravage which the plague causes among men. Whoever desires an account of such calamities, may read ‡ THUCYDIDES his elegant description of the plague at ATHENS; § LUCRETIVS on the same subject; Dr. MEAD's discourse on the plague: but || VIRGIL's description of the diseased cattle comes nearer to our purpose.

Such

† LANGRISH's Theory of Physic, p. 356, Art. 613.

‡ THUCYDIDES (*Hudsoni*) Hist. lib. ii. p. 110—115.

§ LUCRETIVS, lib. vi. ver. 1123, & seq.

|| Jamque catervatim dat stragem, atque aggerat ipsas
In stabulis turpi dilapsa cadavera tabo:
Donec humo tegere, ac foveis abscondere discunt.

Nam

among the Horned Cattle. 21

Such a decrease of cattle must necessarily deprive all ranks of people of a most substantial part of their nourishment, and greatly distress the farmers in the culture of their grounds, in their dairies *, &c.

† LAN-

Nam neque erat coriis usus ; nec viscera quisquam
Aut undis abolere potest, aut vincere flamma.

VIRG. Georg. lib. iii. ver. 556, &c.

At length whole herds to death at once *it* sweeps ;
High in the stalls *it* piles the loathsome heaps,
Dire spectacle ! till sage experience found
To bury deep the carrion in the ground.
Useless their hides ; nor from the flesh the flame
Could purge the filth, nor steams the favour tame.

WARTON'S Translation.

* In the remotest ages, when idolatry and superstition were the natural offspring of the ignorance of those times, the EGYPTIANS, says DIODORUS SICULUS ¹, from a principle of gratitude, seeing the many uses the horned cattle were of, first as their favourite beast, sacrificed them in an emblematical manner ² ; the bull for its beauty in their worship to the sun, and a black and white cow in honour of the moon. ³ Soon after they deified OSIRIS and

¹ Τους δὲ Ταυρούς τοὺς ἱε-
ροὺς, λίγω δὲ τὸν τῷ Ἀπιν καὶ
Μνευί τιμᾶσθαι παραπλησίως
τοῖς θεοῖς, Οσίριδ' ὡς καὶ ἀδείξ-
ασθαι. ἅμα μὲν διὰ τὴν τῆς
γεωργίας χρείαν, ἅμα δὲ καὶ
διὰ τὸ τῶν ευρόνων τοὺς καρ-
ποὺς τὴν δόξαν ταῖς τούτων
ἐνερπείαις παραδόσιμον γεγι-
νέναι τοῖς μελαγχέστεροῖς εἰς
ἀπαίητα τὸν αἰῶνα.

ΔΙΟΔΟΡ. ΣΙΚΕΛ. βιβλ. α.

Tauri autem sacri APIS
(inquiunt) & MNEVIS, non
secus quam Dii honorantur
ut OSIRIS instituit, tum
propter agriculturæ usum,
tum etiam ut gloria illorum
qui fruges reperissent, unà
cum meritis, ad omnem pos-
teritatis memoriam propaga-
retur.

DIODOR. SICUL. lib. i. p. 79.

² JACKSON'S Chronology, vol. ii. p. 380, 381.

³ Ibid. p. 161.

22 *Of the contagious Distemper*

† LANCISI has refuted the vulgar notion that the bite of the *Buprestis*, a sort of venomous insect, or worms caused this disease. In ENGLAND no such insect has appeared; and worms, so commonly found in the first passages of horned cattle, horses, &c. are known to breed and increase wherever they find a proper *pabulum*. Some are hatched by corruption, others are killed by putridity, and different parts of the body have procured an asylum and nourishment to different sorts of worms, according to their *species*.

What particles constitute the pestilential *fomes*, how, and in what manner it acts, I shall not take upon me to determine *a priori*; but leave to others to philosophize on, and refer them to the authors already mentioned. Thus far I will venture to affirm, that either by inspiration, or deglutition, *effluvia* of a very subtle and active nature are drawn in, which first vitiate the fluids, then relax, and destroy the solids of the cattle.

The several stages, the progress, and effects of this contagious distemper, are exactly the

ISIS, consecrating the bull to their king, and the speckled cow to their queen, whose memory they revered in the highest degree ⁴. From the EGYPTIAN idolatry the ISRAELITES chose their god, and worshipped the golden calf ⁵.

⁴ Ibid. p. 160 to 165.

⁵ Exodus xxxii.

† LANCISI de Bovilla peste, part. iii. cap. v. & vi.

same

same with those observed in the small-pox, as will be demonstrated in the following pages ||.

|| *Causas rerum naturalium non plures admitti debere, quam quæ & veræ sint, & earum phœnomenis explicandis sufficiant.*

Ideoque effectuum naturalium ejusdem generis eadem sunt causæ.

NEWTON, *Regulæ philosophandi*, 1^{ma}, & 2^{da}, in *principiis*, p. 357.

C H A P. II.

Of the Symptoms.

AS we observe in the small-pox, and all other putrid or eruptive fevers by which human nature is infected, a regular progress; so in this pestilential fever is the course of the contagion, through its several stages, to be traced by the symptoms †.

All are not equally seized: many reasons may be assigned for a slight or violent infection; but, according to the degree of infection, the *diagnostics* or signs are more or less the same.

The first appearance of this infection is a decrease of appetite; || a poking out of the neck, implying some difficulty in deglutition; a shaking of the head, as if the ears were tickled; a hanging down of the ears, and deafness; a dulness of the eyes; and a moving to and fro, in a constant uneasiness. All these

† *Ipsa pestis* quid obsecro, aliud est quam symptomatum complicatio, quibus utitur natura ad inspiratas unâ cum aëre particulas *μιασμώδεις*, per emunctoria, apostematum specie vel aliarum eruptionum operâ, excutiendas. SYDENHAM de Morb. Acut. p. 2.

|| ARETÆUS de Morb. Acut. p. 20.

signs,

signs, except the last, increase till the fourth day. Then a stupidity and unwillingness to move, great debility, a total loss of appetite, a running at the eyes and nose, sometimes sickness and throwing up of bile †, a husky cough, and shivering. The head, horns, and breath are very hot, while the body and limbs are cold. The fever, which was continual the three first days, now rises and increases towards evenings; the pulse is all along quick, contracted, and uneven. A constant *diarrhæa*, or scowering of foetid green *stercus*, a stinking breath, and nauseous steams from the skin, infect the air they are placed in. The blood is very florid, hot, and frothy. The urine, or stale, is high coloured; the roofs of their mouths and their barbs are ulcerated. § Tumours or boils are to be felt under the *panniculus carnosus*, or fleshy membrane of the skin; || and eruptions appear all along their limbs, and about their bags. If a new milch cow be thus ill, her milk dries up gradually, her purging is more violent, and on the fourth day she is commonly dry. There is such acrimony or sharpness in their dung, that a visible irritation is to be observed during some time *in ano*. They groan much, are worse in

† ARETÆUS de Morb. Acut. p. 20.

§ Gent. Mag. vol. xvii. p. 153. RAMMAZINI de Contag. Epid. LANCISI de Bovilla peste, part. iii. cap. viii.

|| ALDROVANDUS de Quadruped. bifulcis, lib. i. p. 110. *de malide subtercutanea.*

26 *Of the contagious Distemper*

the evening *, and mostly lying down. These symptoms continue increasing till the seventh day from the invasion, on which generally, tho' sometimes protracted till the ninth, the *crisis* or turn takes place.

And now, to be as concise as possible, I proceed to point out, in the next chapter, the *prognostics* or signs which denote the cure or the loss of the beast.

* HIPPOCRATES, lib. de *Indicationibus*—Observavi semper in morbo vehementiori ægrum sub vesperam quasi paroxysmo laborasse & funestiora symptomata vespertinis præsertim horis se ostendere atque exacerbari. SYDENHAM, de Variolis, p. 101.



C H A P.

C H A P. III.

Of the Prognostics.

Difference in constitutions occasions different effects from the same contagion, as well in the brute creation as in the human body. This will occur to every attentive observer, therefore I shall not make the least offensive comparison.

The same rule which VIRGIL * observed in the choice of a horse, may be followed in chusing any of the horned cattle: probably their colour may indicate the degree of their strength; the *black*, as having the strongest fibres composing their solids, and most globular blood: next to these the *dark bay*; then the *light bay*, the *pie-ball*; but the worst of all colours are the *brindled*, *fallow*, or *white*; possibly on account of their fibres being more relaxed, and their fluids abounding with more *serous* or *lymphatic* juices †. Be that as it may,
it

* honesti

Spadices glaucique color deterrimus albis

Et gilvo.

VIRG. Georg. lib. iii. ver. 82.

† A *white* cow generally gives most milk; but then, being more *serous*, is neither so nourishing, nor so proper for making butter or cheese. The *red* cow's milk is more elaborated, tho' less in quantity; consequently affords more nourish-

28 *Of the contagious Distemper*

it is very certain these different cattle were affected in a greater or lesser degree by the contagious and pestilential distemper, according as they answered the colours just described.

* GEORGIUS ALEXANDRINUS, writing to the senator JUSTINIANUS, tells him, that VIRGIL, in his Georgics, has introduced many things from VARRO.

Of the three antient writers on husbandry, CATO, whom PLINY † calls the oldest, sets down no rule relating to the choice of cattle, nor their colour: VARRO and COLUMELLA agree in the same directions; and should their opinions confirm my suggestion, the foregoing observation will deserve some notice.

MARCUS TERENTIUS VARRO very circumstantially and minutely thus directs his countrymen in the choice of horned cattle:

nourishment. The *black cows* may not yield so much milk as the two former; but it will be thicker, of a richer substance, and best adapted for the uses of the dairy. Yet it may be necessary to mix these several sorts, for the different purposes intended. *Histoire Naturelle*, tom. iv. p. 456.

* Vide ALEXANDRINI Epistola ad JUSTINIANUM, in edit. scriptor. de re rustica.

† Primusque & diu solus idem ille M. CATO omnium bonarum artium magister, paucis dumtaxat attigit, boum etiam medicinâ non omisâ. Catonum ille primus triumpho & censura super cætera insignis, magis tamen etiamnum claritate litterarum, præceptisque omnium rerum expendarum datis generi Romano, inter prima vero agrum colendi, illius ævi confessione optimus ac sine æmulo agricola. PLIN. Nat. Hist. II. lib. xxv. p. 359, & I. lib. xiv. p. 712.

“ Who-

“ * Whoever would buy stock, must first ob-
 “ serve, that the cattle be rather of a proper
 “ age for breeding, than older, and such as
 “ have bred. That they be well made, with
 “ sound limbs, long shaped, and large; with
 “ black horns, broad foreheads, large black
 “ eyes, hairy ears, thin jawed, and flat nosed,
 “ a high back with a gentle fall, wide nos-
 “ trils, black lips, thick and long necked,
 “ the dewlap hanging loosely from the neck,
 “ the body large and well ribbed, broad
 “ shoulders, good buttocks, a tail hanging
 “ down to their heels, having at the end a
 “ good quantity of strong curled hair, the
 “ legs well made, rather short than long,
 “ strait knees with a rising in the middle; nar-
 “ row feet, which neither are apt to split when

* Qui gregem armentorum emere vult, observare debet
 primū, ut sint hæ pecudes ætate potius ad fructus ferendos
 integræ, quam jam expertæ. Ut sint bene compositæ, ut
 integris membris, oblongæ, amplæ nigrantibus cornibus,
 latis frontibus, oculis magnis & nigris, pilosis auribus, com-
 pressis malis, submissivæ, gibberi spina leviter remissa, aper-
 tis naribus, labris subnigris, cervicibus crassis ac longis, a collo
 pallearibus demissis, corpore amplo bene costato, latis hume-
 ris bonis clunibus, cauda profusa usque ad calces, ut habeat
 inferiorem partem frequentibus pilis subcrispam, compactis
 cruribus, potius brevioribus quam longis, rectis genibus, &
 eminulis distantibus inter se, pedibus non latis, neque ingre-
 dientibus qui displodantur, nec cujus ungulæ divaricant, &
 cujus ungues sint leves & pares, corium attactu non asperum,
 ac durum, *colore potissimum nigro, deinde rubeo, tertio helvo,*
quarto albo; mollissimus enim hic ut durissimus primus. De
mediis duobus prior quam posterior melior, utrique plurius quam
nigri & albi. M. T. VARRO de re rustica, lib. ii. cap. 5.
 Histoire Naturelle, tom. iv. p. 456, 457.

“ they

30 *Of the contagious Distemper*

“ they walk; nor their hoofs to part; the
 “ hoofs also must be even and found, the hide
 “ soft and smooth, *of a black colour preferably*
 “ *to any other, next of a red, thirdly bay,*
 “ *fourthly white. The first sort is the strongest*
 “ *and hardiest, the latter by much the weakest,*
 “ *tender, and less able to bear fatigue. Of the*
 “ *red and the bay, the first is to be preferred.*
 “ *But both these are to be chosen rather than a*
 “ *mixed colour of black and white.”*

COLUMELLA's advice runs thus: “ § Such
 “ horned cattle are to be bought as are young,
 “ well shaped, full limbed, with strong and
 “ large black horns, a broad and uneven fore-
 “ head, thick and hairy ears, black eyes and
 “ lips, flat and wide nostrils, a long and fleshy
 “ neck, with a large dewlap hanging down
 “ almost as low as their knees, full chested,
 “ wide shoulders, and a capacious belly as if
 “ big with calf, long sides, thick loins, a
 “ strait, even, and somewhat falling back,
 “ round fleshy buttocks, strait and well-shaped

§ Parandi sunt boves novelli, quadrati, grandibus membris, cornibus proceris ac nigrantibus, & robusti, fronte late & crispa, hirtis auribus, oculis & labiis nigris, naribus refirmis, patulisque; cervice longa & torosa, palaribus amplis, & pene ad genua promissis, pectore magno, armis vastis, capaci & tanquam implente utero, lateribus porrectis, lumbis latis, dorso recto, planoque, vel etiam subsidente, clunibus rotundis, cruribus compactis ac rectis, sed brevioribus potius, quam longis, nec genibus improbis, ungulis magnis, caudis longissimis, & setosis pilosisque, corpore denso brevique, *colore rubeo, vel fusco tactu corporis mollissimo.* COLUMELLA de re rustica, lib. vi. cap. i. De bubus parandis, atque emendis, earumque formâ.

“ legs,

among the Horned Cattle. 31

“ legs, rather short than long, good knees,
“ wide hoofs, long tails full of strong and
“ curling hair, the body fleshy and compact,
“ of a *red or brown colour*, with a soft and
“ *filky* hide.”

But to return. Bulls and oxen are not so violently attacked as cows and calves; and of these, cows with calf, and weakly cow-calves, are in the greatest danger.

Should a cow with calf, at the critical time of this disease, slip her calf, she then takes her fodder, and recovers: some may only give signs of such abortion, and bear their calf several days, nay even weeks, before they slip it, and yet recover. Calves receive the infection from the cow by sucking her milk, and may also, if first seized, infect the cow.

This disease, being a contagion of the pestilential kind, is susceptible at all times and seasons: in autumn and summer it will rage most, ~~in~~ in spring and winter least, according to the alterations commonly happening in these seasons. At the time of new and full moon*, farmers observe the greatest number of cattle fall of this illness; but the fatality which, as DIEMERBROEK relates†, attended those who were seized with the plague, at such changes of the moon, was not so great among the cattle. He says, that almost all died. I found no difference as to the loss of more or fewer

* MEAD de Imperio Solis ac Lunæ, p. 67.

† DIEMERBROEK de Peste, p. 9.

beasts,

32 *Of the contagious Distemper*

beasts, in different times. May we not endeavour to account for, and reconcile these opposite observations thus? That supposing, with Dr. MEAD †, the influence of the celestial bodies on the human and brute creation equally powerful, yet, as brutes are limited in their conceptions, they are exempt from that fear, and those apprehensions of a contagious disease, which man alone feels in the most dreadful and affrighting light, continually expecting the first seizure to be speedily followed by his dissolution. Such terrible reflections may well increase the number of victims. § Dr. GEORGE BAKER has given us a very elegant description of what tragic scenes the passions of the soul act on the human body, in his learned dissertation lately published.

Having now shown the colour, sex, and age of the cattle more or less liable to infection, and noted the time of its spreading, let us consider by what signs we may expect a favourable event, and which will forebode a fatal one.

All epidemical distempers, says the great Dr. MEAD ||, “ have their stated times of “ heighth, commonly called their *crisis*, or “ critical days.” In the contagious distemper, the fate of the beast is generally determined on the seventh day * from the invasion, tho’ some-

† MEAD, loc. cit.

§ BAKER de affectibus animi.

|| MEAD de Imperio Solis ac Lunæ, p. 68, 71, &c.

* HIPPOCRATES de diebus decretoriis, in lib. de Epidem.

sometimes it has been delayed till the ninth : but if, in consequence of ill-treatment or mismanagement, the beast should fall into such disorders as shall hereafter be specified, I cannot lay such miscarriages solely to the immediate cause of the contagion, but to a bad constitution, or want of care during and after the illness.

If therefore the following symptoms be observed on the seventh day from the seizure, namely, either * eruptions all over the skin, or boils as big as pidgeon's eggs in different parts of the body, but especially from the head to the tail, along each side of the spine or backbone, and so ripe as to discharge putrid and stinking matter, large abscesses formed in the horns †, or in some parts of the body ‡, the dung more consistent and firm, the urine thick, and not quite so high-coloured, if the beast has had a shivering, succeeded by a general glow of heat, upon which the fever has abated, and the heart beats regularly, without intermission, or hardness, if the nose be sore and scabbed, the eyes look bright and brisk, and the beast pricks up its ears at your going into the hovel or barn, and will eat a little hay or peas, whether, if a cow, she has slipped her

den. prognost. & Aphorism. PROSPER ALPINUS de præfagienda vita & morte, lib. v. cap. 4. GALENUS de dieb. decret. & cris. p. 357.

* Gent. Magaz. vol. xvii. p. 152.

† Gent. Magaz. vol. xx. p. 525.

‡ Gent. Magaz. vol. xvi. p. 652.

D

calf,

34 *Of the contagious Distemper*

calf, or not; these symptoms will determine that the beast is out of danger.

But on the contrary, if on the seventh day from the invasion the eruptions, boils, or abscesses are decreased in bulk, or totally disappeared without having broke or discharged outwardly; if the scowering or purging continue almost constantly on the beast, the breath be very hot, while the whole body, limbs, and horns are cold, the groaning and difficulty of breathing increased, the running from the nose and eyes lessened, the eyes dim and sunk into the head, a perfect stupidity; the stale or urine dark coloured, the beating of the heart intermitting, and a cadaverous smell; if these or most of these symptoms appear, we may assuredly pronounce a beast under these circumstances incurable, and inevitably will soon die.

Within some hours of its death, there frequently arises on the back, upon the sinking of the small swellings, a large tumour or bag,* filled as it were with air; pressing upon which, the contents will move to and fro from the head to the tail.

This is not only mentioned by RAMMAZINI, but also by authors who deemed the disease to be only an inflammatory fe-

* Sicuti etiam ingentes vesicæ solo flatu plene; que dissectæ, diram Mephitim, exhalarent; RAMMAZINI de contag. Boum. Epidem. p. 458.

among the Horned Cattle. 35

ver *; it is called an *emphysema*, and will be described in the following chapter, wherein I shall give an account of what appeared on dissection.

* See an account of the epidemical distemper among the Black Cattle, printed by A. Millar 1745. p. 4. and Dr. BROCKLESBY's Essay on the Mortality among the Horned Cattle. 1746, p. 62.

C H A P. IV.

Of Dissections.

Without a thorough knowledge of anatomy, all authors, both ancient and modern, agree, that the practice of physic would be guess-work at best; and certainly, to avoid quackery, and settle our practice on the most solid foundation, it is absolutely requisite to be well acquainted with the constituent parts of the body, the laws of the animal œconomy, the difference between the sound and morbid state, as also whether by the appearances upon a strict examination, the diseases arise spontaneously from the nature of the subject, or from external causes *. For CELSUS observes †, “ As there arise
“ pains and diseases of various kinds in
“ the internal parts, it cannot be imagined
“ that any one can direct proper remedies,
“ who is unacquainted with the structure of
“ those parts : therefore it is necessary to
“ open dead bodies and examine their bowels
“ and intestines ‡.”

* BOERHAAVE *Institutiones Medicæ*, p. 8.

† CELSUS in præfatione, p. 7. Præter hæc cum in interioribus partibus & dolores & morborum varia genera nascantur, neminem putant his adhibere posse remedia, quas ipse ignoret. Necessarium ergo esse incidere corpora mortuorum, eorumque viscera atque intestina scrutari.

‡ HEISTERI *Compendium Anatomicum*, p. 3.

The strictest examination of both morbid and sound carcasses, proved of the greatest use towards ascertaining the effects of this contagious disease, and the method of cure to be followed. How could any one account for the difficulty of clearing the *primæ viæ*, after proper bleeding in the first stage of the distemper, who had never seen the structure of the different stomachs? Should vomits and purges have been given without being well informed of the mechanism, structure, and contents of the stomachs, and knowing whether there was a greater probability of their discharging the passages, than of bringing on an inflammation first, and afterwards a mortification by the irritation they must cause? Had the *crocus metallorum* purged favourably, or brought on a perspiration as it generally doth in quadrupeds, doubtless Dr. MORTIMER would have recorded it *. In the following anatomical review, we shall see, why neither vomits nor irritating purges could have the desired effect. I do not propose here to give the whole anatomical description of a bull, cow, or calf; whoever cannot follow the dissection themselves, or are too nice to attend the slaughter-house, may, in † messieurs DE BUFFON and D'AUBENTON'S *Histoire Naturelle*, read a very accurate account, and see the chief parts extremely well represented in the plates annexed.

* Gent. Mag. vol. XVI. p. 651.

† *Histoire Naturelle*, tom. IV.

38 *Of the contagious Distemper*

For brevity sake, I shall confine myself to some cursory remarks on the structure of such parts, as are chiefly the seat of, or mostly are affected by the disease. Besides the usual integuments, namely the hair which in horned cattle grow thick, long, and silky, the *epidermis* or scarf-skin, the *cutis* or skin, and the *membrana adiposa*, or cellular membrane, which contains the fat; there is also an integument situated between the skin and fat, composed of fleshy fibres, and called by the name of * *panniculus carnosus* or fleshy membrane. Its use in these horned creatures, and likewise in horses, sheep, dogs, and other quadrupeds, is to wrinkle up, and move the skin, so as to be able to throw off any insect, filth, or noxious matter sticking to it. All fleshy fibres have their artery, vein, lymphatic, and nerve; and doubtless there is an expansion of nervous filaments all over this membrane. From the thickness of the common integuments therefore, and particularly of the skin, eruptions may not always be observed unless they are felt. And from the sensibility of this membrane, the rigors and *horripilations* or shiverings, may likewise be accounted for, at a time that nature is forcing out the acrid pestilential matter, which in its passage wounds this nervous expansion and the skin.

The horns are a thin long cavity, containing a medullary substance called pith or mar-

* HEISTERI Compendium Anatomicum; p. 54.

row, of the same consistence with that found in the *frontal sinus*, of which the horns are a continuance *. Arteries, veins, nerves, and lymphatic vessels compose the glands which fill these cavities, and serve not only by the oil they separate, to lubricate the bones and horns, but also to give such a firmness and strength to the latter, that they may arm the beasts sufficient for their defence: the communication through the nostrils and nose to the *sinus frontalis*, is plain enough. Should the contagious *effluvia* be drawn up this way, then arise inflammations, mortifications, tumours, abscesses, and ulcers along the nose, in the *sinus*, and in the horns. The same effects appear on the glands of the throat and mouth, which are of the same texture. Vefications, *phlyctenæ*, and ulcerations, like those related by Dr. FOTHERGILL † in his account of the putrid sore throat, are common in this disease. These similar symptoms have not only convinced observers that this distemper is of a putrid nature, but moreover afforded a similar indication of cure.

* Nutrimentum quod ad superiores dentes quibus carent abire debet, in cornua abit; suntque multiplicis differentiae. JOHNSTON de quadrupedibus, lib. 2.

† FOTHERGILL's account of the sore throat attended with ulcers. In January and February 1755, this sore throat appeared in Huntingdonshire. The method this gentleman directs succeeded, and none died but one girl of twenty years of age, who was treated improperly.

40 *Of the contagious Distemper*

The deafness may be occasioned partly by a relaxation of the *Eustachian tube*, which opens into the mouth, and is compressed by the neighbouring glands relaxed and distended with lymph, and partly by a relaxation of the auditory nerve, the muscles and membranes of that organ.

The *œsophagus* or *Gullet*, the *Aspera, seu Trachea Arteria*, or *Windpipe*, the lungs, heart, kidneys, bladder, I shall give no description of; almost every one knows their texture, and in what manner they are affected, the dissections will hereafter set forth.

I come now to that admirable contrivance by which the Almighty Creator has provided these beasts with the means of digesting their food, amply making amends for their want of sharp teeth, the *incisores*, in the upper jaw*.

I. All ruminating animals have four stomachs, each distinguished by a particular name, either to denote its dimension, figure, or action, as, first, *κοιλία*, *venter*, *rumen*; by the antients, *panse herbier ou double*, by the author of l'Histoire Naturelle, and in our language *paunch*, *belly*, *cud-bag*, and *single tripe*. This first stomach is the largest of the four in a full-grown beast, but in a young calf is less than the fourth †, because a calf makes less

* Inde factum ut dentium defectum ventrium multitudine natura pensaret. JOHNSTON, lib. ii. de quadrupedibus, cap. i. de ruminant. cornig.

† Hist. Naturelle, tom. iv. pag. 462.

use of this stomach, eating a small quantity of grass, chewing also little cud, the chief part of a young calf's food being milk, or such other liquid nourishment as can pass easily through all the stomachs, without requiring much digestion or preparation. The *tunica*, or coats of this stomach, are four, connected to each other by a cellular membrane, which sometimes is ranked among the number of coats. The first is a continuation of the *peritoneum*; the second is muscular, the fleshy fibres of which run in different directions, some from top to bottom longitudinally, others transversely, others obliquely. Moreover, two very strong *fasciculi*, or bundles of fleshy fibres, intersect each other at the bottom of this stomach; they are united by a broad cellular membrane, and form like the crown of an arch, dividing the bottom into four distinct cavities or bags; "These cavities," according to l'Histoire Naturelle *, "were not equal, the right larger than the left, being three feet nine inches in circumference, the left two feet eleven inches only; the circumference of the whole paunch was six feet ten inches. The *scissure* which divided these cavities, and formed the external convexities, was ten inches in depth, strongly connected by the cellular membrane already mentioned: it extended itself obliquely from right to left,

* Hist. Naturelle, tom. iv. p. 486, 487.

" and

44 *Of the contagious Distemper*

II. The second, called κερούφαλος, *reticulum*, by Dr. JOHNSTON †, by the authors of l'Histoire Naturelle ‡, *le bonnet ou reticule*, by us the *honey-comb*, or *double tripe*, is seemingly a part of the foregoing stomach, being only separated from it by a long thick duplicated membrane; and, as the author of the above-mentioned Histoire Naturelle says, were it not for the different texture of this stomach, it might be deemed belonging to the paunch; whereas it is a distinct *viscus*, connected as an appendage to the paunch, and, from its internal surface, will appear designed for some particular uses; outwardly it has the shape of a cap inverted, and hanging flapped to the side of the paunch. The several coats of this stomach are thicker than those of the paunch; the outer one, formed by a prolongation of the *peritoneum*, is smooth, and strictly connected to the muscular coat, which is very thick. The vascular coat forms a sort of net or honey-comb work, whose *areolæ* rise about a quarter of an inch from the internal surface. The *areolæ*, or little cells, are divided by thin partitions, indented at the top with grooves from top to bottom, and placed in various directions, so as to give them the figure of quadrangular, pentagonal, hexagonal, or circular cavities. These *areolæ*, with their partitions indented and grooved,

† JOHNSTON, lib. ii. de quadrupedibus, cap. i. de ruminantibus cornigeris.

‡ Histoire Naturelle, tom. iv,

are every where beset with *papillæ*, and all are covered very exactly by the fourth coat or *tunica villosa*, which is particularly thin, and easily rubs off. The author of l'Histoire Naturelle says †, "That, notwithstanding the
 " oddity and whimsical appearance the internal surface of the *reticulum* or *bonnet* affords to our view, it is by no means the
 " most interesting part which chiefly should fix our attention in the examination of this
 " stomach, but that the duct, canal, or *gutter*, (as he calls it) which is placed on the
 " superior part of this stomach, and runs from the *æsofphagus* to the orifice of the third stomach, is by far much more deserving our
 " notice: this canal is eight inches long, its lateral edges are formed by a prominent
 " duplicature of the membranes beset with *papillæ*. This semi-duct or canal is looked
 " upon as a continuation of the *æsofphagus*, also by contracting itself, and bringing
 " both the edges close to each other, is thought capable of forming a closed passage, or an entire continued § canal, from
 " the *æsofphagus* to the third stomach."

With the author of l'Histoire Naturelle I admire this mechanism, but must beg leave

† Hist. Naturelle, tom. iv. p. 489.

§ The passage may be so close as to give no admittance to food, the thick sides and edges serving as valves; but, from the fluids seen in the honeycomb and paunch, there is reason to believe that fluids have a passage into those stomachs.

48 *Of the contagious Distemper*

supply the paunch whenever it casts up the cud for a second mastication. This seems to me an explanation of what use this odd and whimsical structure is, mentioned by the authors of *l'Histoire Naturelle* * ; and, should I be so fortunate as to have my opinion approved by those learned gentlemen, and other naturalists, I dare flatter myself they will admire this noble mechanism to the full, as much as the semi-duct, since, doubtless, from their construction, they are both wisely formed for a reciprocal use.

III. The third stomach, by an extraordinary and still more surprising construction than the former, bears chiefly its name from what is observed within†. The antients called it *exiv* §, *omasum* ; the moderns also name it in French *le feuillet*, &c. § in England the *manifold*, or *feck*. Outwardly this stomach has some resemblance to a long melon by the divisions which are marked, is larger than the *honeycomb*, and lesser than the fourth stomach or *rennet-bag*. Internally this stomach is divided longitudinally by two semicircular concave folds formed by the vascular membrane, and beset with the *papillæ* already described, only they are larger and conical : these two have

* Hist. Naturelle, tom. iv. p. 456.

† Hunc excipit *omasum*, parte interiori cancellatum crustatum, magnitudine reticuli. JOHNSTON loc. cit.

‡ JOHNSTON de quadrupedibus, &c. lib. ii.

§ Hist. Nat. tom. iv. p. 490. Feuillet, Millet, Malle, ou Pseautier.

between

between them many other folds, some of a middling size; and, between these, others yet smaller. * Monf. D'AUBENTON has reckoned up ninety-six. These folds resemble fish-skin, and, from their laying one over another, have been compared to lattice-work, the leaves of a book, &c. whence arose the names just given. Between each of these folds is generally found some part of the fodder, which shows, that the use of this stomach is to grind chewed aliment, express the chyle out, and convey both into the fourth or last stomach. A narrow passage, and a strong valve, prevent the return of the nourishment back into the *œsophagus*. The *tunica*, or coats of this and the following, are the same with the two foregoing stomachs.

IV. The fourth and last stomach † Dr. JOHNSTON calls *ἄνυστρον*, *abomasum* §; l'Histoire Naturelle *la caillette*, *la franche-mulle*. In our language it is expressed by the names of *stomach*, *curd-bag*, or *rennet-bag*. The shape is like to a pear. It is the thinnest

* Hist. Nat. tom. iv. p. 491.

† Loc. cit.

§ *Abomasum*. The ancients were not very exact in their description of these stomachs. *Omasum* and *abomasum* they called those stomachs, which were eat as tripes; and instead of the third and fourth, should have sooner been applied to the first and second, which are our single and double tripe.

—— Patinas *coenabat omasi*

Vilis & ægmini. HORAT. lib. i. epist. xv. ver. 34.

50 *Of the contagious Distemper*

of all the four, requiring less strength of fibres to prepare the chyle. The muscular fibres, which run lengthways, and those which, as so many wrinkles, intersect them transversally, form several cavities or *sinus*, wherein the food is lodged and expressed. Both at the *cardia* and *pylorus* there are circular muscular fibres, which contract, and, with the *valves*, prevent any return. In sucking calves, the *sinus* are found to contain expressed *curd*, which, from its acrid particles, after keeping awhile, is used in turning milk for cheese. Others, of late, prefer macerating some portion of this stomach: hence arise the appellations of *curd-bag* and *rennet-bag*. The inside of this stomach is lined throughout by the *tunica villosa*, which is of a very delicate texture, and besmeared with a thick slimy *mucus* discharged by the glands.

From what has been related, it appears, that the *rumen* paunch, or cud-bag, first receives the fodder after mastication, and, by an easy vomiting, called rumination, throws up the cud to be chewed afresh; that the *reticulum*, or *honeycomb*, contains water for the dilution of the food in its course; that from a pappy substance, like unto mashed spinnage, the grass, &c. is expressed still more in the *manyfold*: and lastly, that in the *curd* or *rennet-bag* it acquires the consistence of a thick cream, separated from the *feces*, which are conveyed off by the *intestines*.

Here

Here I cannot avoid admiring the stupendous wisdom of the Supreme Creator, who has so excellently formed every thing for the execution of the purpose it was intended for. The horned cattle, designed chiefly for food, and but for very slow draught, are amply provided with large cavities, the stomachs, to store up much fodder and water, that they may be the better enabled, by the juices extracted from their fodder, to furnish us plentifully with milk, and support us by their flesh. How also, by their make, they carry a sufficient quantity of water to quench their thirst in a day's journey or work, requiring only to be watered twice a day. Examine now the inside of a horse: his stomach is small, in comparison with other quadrupeds of his size; and the only one he has, is sufficient to contain the provender which will support him during his labour. The teeth and the *saliva* break and soften his food, whether grain or grass, to such a degree, that, with the water he drinks, digestion is quickly performed in the stomach, which is soon emptied. Had this creature as many stomachs as the horned cattle, and of the same extent, the design of the Great Creator would have been frustrated; for the continual pressure of all that weight, contained in the several stomachs, against the *diaphragm*, and consequently the lungs, would never have permitted the free exercise of the organs for respi-

52 *Of the contagious Distemper*

respiration. A horse, then, would have had no more speed than a cow; and daily experience testifies, that riding a horse swiftly, after his stomach is extended by drinking, brings on diseases of his lungs, which are not easily removed.

Moreover, that so large a creature should not suffer by a too speedy digestion, a particular mechanism is discovered in the structure of the *colon*, peculiar only to this animal * †. The *colon* has four cavities, or bags, of different sizes; divided from each other by strictures, and a contraction of the intestine; so that this natural widening of this gut, and its two curves, help to fill up the cavity of the *abdomen*, containing a large quantity of *fæces*, from whom the lacteals absorb what fluid they are to secrete. The inferior part of the *colon* is furnished with small cavities, contracted by strictures, which mould the excrements into *scybala*. The extent therefore of the *colon*, its cavities, and situation, serve to assist the stomach, and make amends for its smallness; also prevents a weight laying against the *diaphragm* and lungs, which would obstruct respiration, whenever a horse quickened his pace. If the stomach of a horse be not so formed as to be emptied by vomiting, on account of the oblique insertion of the *æso-phagus*, the sphincter which compresseth it,

* Hist. Naturelle, tom. iv. p. 308—315.

† GIBSON'S Farriery.

and

and the duplicature around the *cardia* †: whoever calls to mind the structure of the four stomachs of a horned beast, just described, will plainly see not only the impossibility of clearing *all* the stomachs, even in other diseases where the hardened *pabulum* is not to be met with; but the great danger there is of irritating and inflaming the inner coats of these stomachs, by drastic purges or stimulating vomits.

One observation is unavoidable, that medicines for that intent, given in a solid form, will first be only received into the *rumen* or paunch, and must follow the same slow progress through most of the stomachs, as their food does. Secondly, liquid purges may be partially distributed in all the stomachs, and rather irritate than have the desired effect.

I hope this anatomical digression will not be disagreeable to the reader. I will now lay before him what was observed, upon opening the dead carcases of beasts which died of this contagious distemper.

All the carcases that were opened, appeared outwardly extenuated by the violence of the scowering. Upon opening the skin, much stinking air rushed out, with sometimes a purulent and sanious discharge *. The vessels of the brain were turgid, and filled with blood of a very red and loose texture, the

† Hist. Naturelle, tom. iv. p. 308—315.

* RAMMAZINI de Boum contagione epid. p. 458.

54 *Of the contagious Distemper*

ventricles filled with water. The * membranes of the nose, the glands †, the whole extent of the *frontal sinus* ‡, the pith of the horns, highly inflamed, ulcerated, and full of small abscesses; the same appearance in the mouth, and about the glands of the throat. The lungs inflamed with livid sphacelated spots, and here and there loaded with *bydatides*; and the cellular texture frequently distended with air. The heart large, flabby, and dark coloured, containing in its ventricles clots of black blood, of a very loose texture, without *serum*; the fat about it, of a bright yellow. The liver large, its blood and biliary vessels fully extended with dark fluid blood, and very deep coloured bile; the substance of the liver so rotten, as to separate on the least touch. The gall-bladder stretched to a great size, and full of greenish bile; the *œsophagus* ulcerated in some. The *rumen*, cud-bag, or paunch, distended with air, flabby, and containing a hard large substance §, like a dried turf, and consisting of fodder, hardened to that degree. Several marks of

* RAMMAZINI de Boum contagione epid. p. 458.

† LANCISI de Bovilla peste, part. iii. caput. II.

‡ Gent. Mag. vol. xvi. p. 652.

Dr. MORTIMER, having never seen any cutaneous eruptions, boils, nor carbuncles, concludes, in the same page, that the disease is *evidently* inflammatory, without contagion. Now RAMMAZINI tells us, p. 462, that not one of the cattle recovered, but such as had pustules broke out upon the skin.

§ LANCISI, *ibid.*

inflam-

among the Horned Cattle. 55

inflammation and gangrene appeared on all the stomachs. The *reticulum*, or honeycomb, had no fluid in it, but some pappy fodder: its *areolæ* were quite relaxed and collapsed. The *manyfold* contained much of that dried fodder between its several folds, and clung to their sides. The curd or *rennet-bag* was empty, but within highly inflamed, and gangrened in several places: all the intestines empty, and beset with red and black spots. The kidneys and bladder large, without urine; the kidneys of a loose texture, easily torn. The flesh in some was livid, in others of a lively red, but soon turned green. The fat that remained, was of a bright yellow all over the body. In such cows as were with calf, the *uterus* was gangrened in several places, and the waters which surrounded the *fœtus*, or calf, stunk intolerably. In short, every carcass gave sufficient evidence of a general putrefaction: they only differed from each other in this particular, that the virulence of the disease appeared sometimes to have fixed itself chiefly on one vital part; in other carcasses it was found in a different part, and frequently in more places than one.

Upon the whole, it is obvious, that this disease ariseth by a pestilential *fomes*, whose *miasmata*, conveyed by the air, or any other means, insinuate themselves into the fluids of the horned cattle *, either by the organs of

* SYDENHAM de Morb. Acut. cap. i.

56 *Of the contagious Distemper*

respiration or deglutition; that not only they vitiate the fluids by the ferment they produce in them, but also relax the solids, so as to suspend the action of the *primæ viæ*, and obstruct the vital functions; that unless Nature overcome this dreadful assailant, maintaining the strength of the solids, and expelling the morbid matter through the skin *, which is visibly her chief intentions, by those abscesses found under the integuments: nay, unless she be assisted by art in many cases, the beast must fall a sacrifice to the distemper. But, on the other hand, if Nature be supported in her attempts to exclude this poisonous matter, and the methods pointed out by her be attended to, and followed, there will be the same reason to expect success, as in the management of the small-pox. Yet let it be understood, that since all do not recover of the small-pox, tho' never so well taken care of, so in this distemper all will not be cured, notwithstanding the utmost diligence; it having been observed, that the fattest cattle, cows with calf, and young calves, were in the greatest danger, through the laxity of their fibres.

Before I proceed, in the next chapter, to lay down the method of cure, I will endeavour to reconcile the different opinions that have been entertained of this disease, with regard to the inflammation and infection attending it.

* HUXHAM on Fevers.

† By an inflammation is generally understood a fullness and turgency of the blood-vessels, whereby a stagnation is brought on, and, unless speedily removed, by emptying the vessels, which is called derivation, revulsion, or dispersion, terminates either, in the rupture of the vessels and fermentation of the several extravasated blood and fluids in an abscess, commonly expressed by suppuration; or, the vessels having lost their elasticity, and the stagnation still increasing, in which case all sensibility, heat, and circulation are no more to be found, it terminates in a gangrene.

Whatever can wound and irritate the nervous fibres internally or externally, will produce the first; old age, cold, and relaxations, bring on the latter. With regard to internal diseases, there is no doubt but that all those of a contagious kind are attended with inflammation, more or less, according to the constitution of the subject infected, whether sanguine or cacochymic, young or old, and according to the degree of infection. In sanguine and robust subjects the putrid *fomes* increases the circulation of the blood, whose texture may already be much divided by violent exercise, or any other inflammatory cause. In these also, the elasticity* of their fibres affords a great degree of resistance, and constantly endeavours to expel the assailant, until

† LE DRAN. Vide infra.

* BAGLIVI de Fibrâ motrice, cap. vi. & vii.

58. *Of the contagious Distemper*

it has forced it out through the emunctories, or is obliged to yield to the overpowering juices, tainted, and rendered more and more putrid and relaxing, the more they are blended and mixed with the contagious *miasmata*. Then the blood becomes less fluid, the elasticity of the vessels is impaired; obstructions and stagnations come on.

The fever, which arises in the first stage of this distemper, brings on those obstructions which cause an inflammation: in the second stage, this inflammation should abate by a free perspiration or abscesses; and totally disappear in the last stage, by the discharge of the morbid matter.

The inflammation must be attended to, and kept within bounds; but it never should be so violently attacked as other inflammatory diseases. Persons, 'tis true, are much oftner lost in pleurisies, ardent fevers, and inflammations of the intestines, for want of repeated evacuations, than by lessening the quantity of the blood: but then it is worthy notice, that the stagnation causing these inflammations coming suddenly, and there being no putrid ferment to relax the coats of the vessels, the elasticity increases by degrees, as the *impetus* of the agitated blood forces against the sides of the vessels. Thus the motion and heat increases, the fluids grow thicker, the vessels more turgid, the obstruction greater; and, unless the quantity of the blood be considerably

ably decreased, and the vessels disgorged, a rupture of the vessels, and consequently an abscess, will follow; or else a total stagnation, ending in a gangrene.

The stagnation, which causes the inflammation in this contagious disease, cannot terminate in induration *.

Thus it appears, that this distemper is equally inflammatory and contagious with the small-pox, and is to be treated according to the predominant symptoms; but as ‡ CELSUS has long since elegantly observed, “ Diseases “ are not cured by force of words, but by re- “ medies.” I, therefore, shall next consider the method which it may be the most advisable to follow.

* LE DRAN, Traite d'Operations de Chirurgie, chap. de l'*Inflammation*, p. 12.

‡ Morbi non eloquentiâ, sed remediis curantur. CELSUS in præfat. lib. i. p. 10.

C H A P. V.

Of the method of cure.

THE nature of the disease directs the intentions of cure, and every different stage of the distemper points out the several curative indications *.

The analogy between this distemper and the small-pox, will afford a rational process, and RAMMAZINI's directions authorizes this practice †.

Those who treated this as an inflammatory disease, and some who acknowledged it to be infectious, have recommended bleeding in large quantities ‡, and repeatedly §. In this they followed the rules of practice confirmed and approved by experience, in the treatment of inflammations.

* Decursus etiam horum phaenomenon ritè observatus docet nos, quo auxilio, tempore, ordine, modo, & via utendum sit, ut causa morbi proxima in corpore humano, corrigi vel expelli queat. BOERHAAVE Instit. Med. ver. 1148.

† Crediderim itaque in curatione hujus malignæ febris, ea methodo procedendum quæ a bonis medicis servatur in curanda variolosa puerorum febre, distinguendo tempus ebullitionis, a tempore expulsiōis. RAMMAZINI de contag. Boum epid. p. 460.

‡ Gent. Mag. vol. xvi. p. 121.

§ Ibid. p. 650. vol. xvii. p. 30.

|| LEONAR-

|| LEONARDUS BOTALLUS, and SYDENHAM §, were their guides, who bled freely in pestilential cases; but these sagacious and truly honest physicians have distinguished the stages wherein blood was to be drawn; and if they be attended to, it will appear, that they did not mean to direct bleeding at all times, and in all cases; but have expressly noted, that when critical eruptions are formed, bleeding is not only useless, but prejudicial *, especially when the fever and other symptoms abate.

Bleeding, therefore, will be found necessary only when the inflammation is so considerable, and the fever so high, that nature is obstructed, and cannot expel the morbid

|| LEONARDUS BOTALLUS de curat. per sang. miss. cap. v. & vii.

§ SYDENHAM de Febre pestilentiali, anno 1665, 1666, p. 83.

* Erit igitur inutilis venæsectio in exanthematis, & aliis dictis abscessibus erumpentibus aut paulo post, dum febris, & alia mala accidentia (siquæ sint) solvi aut mitescere videbuntur; significat enim id, naturæ vires esse morbificā causā superiores: quare ibi artifex animadvertere debet, ne naturæ conatus rectè inchoatos imprudenter infringat. L. BOTALLUS, cap. v. p. 146. Et infra, cap. xx. p. 234, ait.

* Verum etsi dicti omnes morbi sua natura opem ex missione sanguinis postulent: non tamen ea utilis est omni tempore.

* Apparente autem jam tumore, celebrata venæsectio, a peripheria ad centrum trahat, motui naturæ, qui fit a centro ad circumferentium, inducit motum planè adversantem. SYDENHAM loc. cit. p. 81.

mat-

62 *Of the contagious Distemper*

matter ; and, whenever such symptoms are apprehended, prudence will require bleeding to prevent this coming on, according to the constitution, strength, and age of the beast.

Blisters have been recommended instead of rowels and setons. The acrimonious salts of the *cantharides* would only serve to increase the fever ; could their application on the skin of these creatures be effectual ? The viscosity which follows the first seizure of the disease, is removed by a moderate and timely bleeding, and by the fever in time of despumation, as SYDENHAM names it, or of ebullition, so called by the *Italian* authors : in this case, the texture of the blood is sufficiently broke, by the course of the illness, as appears by the grumous blood found in the carcases, which blood is of a loose texture, the violent scowerings having carried off the serous fluid part of the blood. Blisters are inconsiderable by their discharge, not easily to be kept on the hairy coverings of beasts, and very prejudicial if they encrease the fever.

An absolute impossibility of vomiting the horned cattle has been demonstrated in the chapter on Dissections ; as also, what irritation an attempt of that sort, or a rough drastic purge, must inevitably occasion in their several stomachs. Should necessity require the unloading the *primæ viæ*, lenient means must be used ; and it may not be improper to re-

remark here, that though the stomachs and intestines of those creatures may lose their digestive faculties by this putrid distemper, yet they are not overloaded, nor stuffed up with such acrimonious *saburra* as the first passages in the human body generally are. The reason is plain, their food is simple, and has neither the putridity nor acrimony of the human. Their *faeces* also have not so high a degree of putrefaction. All the vomits and purges in the world cannot remove the caked *pabulum* in the *paunch*. Dilution and strengthening the fibres of that stomach must enable it to digest, or rather, when once duly separated, to belch up the fodder, that it may be chewed afresh for digestion.

The use of *nitre* in the first stage may contribute to lessen the degree of inflammation, but given in any other stage it will check the progress of the *exanthemata*, or pustules, and prevent suppuration; sometimes bring on a scowering, consequently a reabsorption of the putrid matter from the abscesses, and either kill the beast or expose it to a *marasmus*.

Campbor, though an excellent medicine, in acute diseases, especially when dissolved with acids, I did not direct; chusing to prefer such remedies as were cheaper, easier to come at, and not so disagreeable to the stomach.

Chalk,

64 *Of the contagious Distemper*

Chalk, or *testaceous powders*, I made no use of, first, because, since the learned and accurate Dr. PRINGLE * has so clearly proved the *septic* quality of *chalk* and the *testacea*, they are seldom given in putrid fevers, lest they should increase the putrefaction. Secondly, as they would only serve to clog up the *primæ viæ*, without answering the intention, for which medicines of another form were better adapted. The same reason made me prefer medicines of a liquid to those of a solid form.

White vitriol, *mercurials*, and *antimonials*, have proved equally prejudicial, through their irritating quality, as *oils* and *balsamics*, by increasing the relaxation of the *primæ viæ*.

Having considered the inutility, nay detriment, arising from the administration of improper medicines, I shall next lay down the particular method which I directed.

The Cure.

Immediately upon the first appearance of the distemper, as mentioned in the foregoing chapter of the symptoms, the beast is to be put into a barn or stable, well littered; which litter must be thrown up morning and evening, and changed for fresh straw every day: the place the cattle are housed in, should be

* Dr. PRINGLE on *septic* and *antiseptic* substances, experiment xxiii. in the appendix to the observations on the diseases of the army.

spacious; and they must not be crouded, that the air may be neither too warm, nor too offensive by the steams of the infection. In warm weather, the stable or barn-door might be left open half an hour; an opening of about a foot square should be made at the top of the barn to the southward, and one at the bottom to the north-west, in order to give a free passage to the foul air, and entrance to fresh; but the cattle must be so placed out of the course of the air, that they may not receive cold: shutters may be contrived to let down at night, or in a cold day. Bunches of sweet-scented flowers, or aromatic herbs, may be hung in the stable. A thin woollen, or a coarse linnen cloth, should be fastened on the bodies of distempered cattle, rather loose than too tight, leaving always sufficient room for a steer to stale, and not to press the bags of a cow.

If the beast be full grown and fleshy; if a cow, very big with calf, and of such colour as denote strong fibres, then take away two quarts of blood from the neck. From a strong yearling calf, one quart, and so in proportion to age and strength; but neither weakly calves, nor poor thin cows, especially white ones, are to be bled so much, if at all.

The beast must then be washed all over with warm water and vinegar, to clear the hair from filth and insects, and rubbed quite dry with a cloth, or straw. The steams of

F. hot

66. *Of the contagious Distemper*

hot vinegar and water, with aromatic herbs in it, may be placed in the stable, to revive the cattle. During the whole illness, the beast must be rubbed a quarter of an hour, both morning and evening, with a dry woollen or linnen cloth, or straw, to promote perspiration. The cattle are so sensible of the relief this rubbing affords them, that they stand up with great satisfaction all the while their keeper is rubbing them. They may also be curried the three first days, before the pimples come out; and the bags of a milch cow should be anointed morning and evening with warm oil, to preserve the milk; taking care to cover the bags from cold, and to draw off any fullness of milk, which might occasion an abscess.

As soon as conveniently can be done, and the sooner the better after bleeding, let a rowel be made in the dewlap, in the following manner. Take a skain of hemp, tow, or twisted packthread, a foot long, and as thick as a man's thumb; let a hole be made in the dewlap, and this rowel passed through it, so that the ends may hang out at about three or four inches from one another. The rowel is first to be greased with hog's-lard, and not to be moved of twenty-four hours. To prevent cold coming to the rowel, put over it a plaister of tar and hog's-lard, spread upon linnen or tow.

The

* The next morning dress the rowel thus : draw first one end, then the other backwards and forwards, greasing that part of the skain which passes through the wound with an ointment made of the best *Venice turpentine*, and a sufficient quantity of yelks of eggs mixed together, to the consistence of a soft ointment. In the second stage of the distemper, the rowel will swell, and then run; if the flux of matter be considerable, and the part much swelled, it will be proper to put over the swelling a pultice of bread and milk, with a little hog's-lard, and dress the rowel twice a day, till the swelling be abated. The rowel should be kept in at least a month after the recovery of the beast, not only that all the putrid matter may be discharged, but to prevent such disorders as arise from a fullness of the vessels, generally observed upon the recovery from acute diseases, and owing to a quick digestion, and speedy secretion of *chyle*, whereby the quantity of blood is much increased.

Should the beast be hot, hang down its head, breathe with difficulty after the bleeding, dung hard, and the skin feel tight and thick, which is called being *hide-bound*, then it will be very proper to give a gentle cooling

* Rowelling in this manner is preferable to pegging, and taking a piece out, as directed by COLUMELLA, lib. vi. cap. v. the matter being less liable to be confined through cold, when the wound is guarded from the air.

68 *Of the contagious Distemper*

purge in this first stage. The following may answer the purpose.

I.

Take four hands-full of bran, boil it in five pints of spring-water to two quarts; then strain the liquor, and dissolve in it two ounces of lenitive electary, and half an ounce of Glauber's salt, which give to the beast lukewarm.

An hour or two afterwards may be given a draught of water-gruel, in quantity about three pints or two quarts.

When the beast has voided the hardened dung, by this purge, or, if it should not have wanted purging, the following drench is to be given.

II.

Take of madder-root three ounces; of turmeric and * horse-radish-root, each one ounce; of fœnugreek-seeds, bruised, two ounces; of † chamæmile-flowers, dried leaves of feverfew, rue, and sage, of each one hand-full. Boil them half an hour in a gallon of small ale, well hopped, to three quarts; then strain the liquor, and give the beast three pints

* See Dr. PRINGLE's experiments, N^o. xiv. and xx. on the *antiseptic* quality of horse-radish-root, and chamæmile-flowers.

† Dr. HALES's hæmæstatics, exp. xvii. on the astringent quality of these flowers.

in the morning, and the remainder in the evening.

No dry or solid fodder is to be offered, till the beast cheweth the cud. Between these drenches, a quart or two of vinegar-whey must be given frequently in the day, to dilute the hardening fodder, and strengthen the coats of the stomach. The vinegar-whey is thus made.

III.

Take equal quantities of milk and spring-water, and, when boiling, pour in a sufficient quantity of distilled white-wine vinegar, to turn the mixture; then strain off the whey, and always give it luke-warm.

The three first days elder-vinegar will be most suitable, and afterwards I would prefer garlic vinegar; but whether with or without these, the vinegar used must be distilled, that it may be the purer, and free from dregs or insects.

* The beast may also drink hay-water, which is an infusion of hay, made by pouring boiling water on cut hay, and letting it stand till the water be brown, like bohea-tea, or beer-wort. In this case I would recommend the adding chamæmile-flowers sufficiently, only to give the liquor a pleasant bitterness. This hay-water is not instead of the vinegar-

* See Gent. Magaz. vol. xx. p. 14.

70 *Of the contagious Distemper*

whey; tho' both are proper, yet the whey, besides being very agreeable to these distempered creatures, is of greater efficacy in this putrid disease: therefore both hay-water and vinegar-whey are to be used alternately.

I prefer vegetable to mineral acids for these beasts, on account of the first being more at hand, not corrosive, less sharp and irritating; there requiring no other exactness in the mixing them, than taking care not to make the hay-water, or any other mixture, too sour. † The authors of *l'Histoire Naturelle* tell us, that the horned cattle are naturally so fond of wine, vinegar, and salt, that they greedily eat up a dressed salad. And I observed, that the beasts I saw, so far from requiring any force to get the medicines or whey down, regularly looked for them, and licked up even the last drop they could get out of the pail.

Great care must be had, twice or thrice a day, to cleanse the mouths, barbs, and nostrils of the distempered cattle. The following mixture was made use of,

IV.

Take of Malaga raisins and figs, each two ounces; mustard-seed, bruised, half an ounce; boil them in three pints of milk and water to a quart; then add two ounces of honey of roses, and half an ounce of spirit of salt ammoniac. With this mixture let the mouth,

† *Hist. Naturelle*, tom. iv. pag. 467.

barbs,

barbs, and nostrils be washed and cleansed, by means of a brush or sponge. Continue this till the ulcers about the nose and mouth begin to scab; then washing with sage-tea, sweetened with a little honey of roses, and made tart with vinegar, will be sufficient. Should the acrimony of the disease be so severe, and the blood be so much broke in the progress of the disease, that the ulcers bleed, then to the sage-tea should be added enough powdered roch-allum, to give the tea a considerable roughness.

On the fourth day, if the beast be heavy, dull, shivering, no pimples or knobs arise, and a purging be coming on, the following drench must be given at about eight in the evening, and repeated three or four nights, as occasion requires, agreeable to * SANCTORIUS; who advises *medicines which promote perspiration, to carry off a looseness.*

V.

Take of Virginia snake-root, contrayerva-root, chamæmile-flowers powdered, of each half an ounce; Venice treacle, six drams: mix all these in three pints of vinegar-whey, and give the drench luke-warm.

Let a person sit up all night with the beast, and give it frequently a quart of vinegar-whey.

* *Profluvium alvi tollitur iis, quæ perspirationem augent.*
SANCTORII Aphorism. sect. i. art. xcii.

72 *Of the contagious Distemper*

Mr. ‡ MONTGOMERY furnishes six instances, out of seven, which were cured by Venice treacle; and tells us plainly, that the seventh was killed by giving *a lump of tar with oil of turpentine*, which checked the operation of the *Venice treacle*, by clogging up the stomach.

The former drench, N°. II. directed to be taken twice a day, is to be given early in the morning, and about three or four in the afternoon, that it may not interfere with the Venice treacle drench. Hartshorn drink may be given, a quart at a time, frequently in the day.

But when a mortification is apprehended, by the dark and relaxed appearance of the mouth, the coldness of the beast, the black fetid dung, insensibility, sanious discharge from the mouth and nose, thickness of the eyes, the *bark* must then be instantly given.

Dr. WALL §, guided as I was by the analogy there is between this contagious distemper, the small-pox, and Dr. FOTHERGILL's account of the sore throat, attended with ulcers, recommends in his own name, as also in Dr. CAMERON's, and of the other physicians at WORCESTER, the administering the *bark* in this disease.

The doctor directed “ one ounce of *Jesuits bark*, finely powdered, to be given in a decoction of one ounce of *myrrh*, boiled in

‡ Gent. Magaz. vol. xviii. p. 282.

§ Gent. Magaz. vol. xviii. p. 71.

“ three

“ three quarts of water and *vinegar* to half
“ the quantity; and to be repeated every four
“ hours.” The drench I prescribed is as
follows.

VI.

Take of oak-bark, two ounces; Peruvian,
otherwise called Jesuits bark, myrrh, each one
ounce. Let the barks be both beat to a coarse
powder, and the myrrh bruised. Then put
the barks into five pints of spring-water, and
boil gently till the quantity decreases to two
quarts: then add the myrrh, and let the
whole boil away gently to three pints. Strain
the decoction through a coarse linnen cloth,
and add two drams of roch-allum powdered.
Let the beast have this drench luke-warm
every four or six hours, as occasion may re-
quire.

A half-pint of red wine lees may be added,
if the purging be considerable, and the beast
weak. Vinegar-whey, oatmeal-water, and
hay-water, with chamæmile-flowers infused,
and acidulated with vinegar, are to be given
in the intermediate times.

Holding the mouth and nose of the beast
over the hot steams of water, vinegar, tinc-
ture of myrrh, and honey of roses, and con-
veying those steams into the throat by means
of a large funnel, will answer the intentions;
it being very difficult, in this bad state, to
keep

74 *Of the contagious Distemper*

keep up the head long enough to cleanse the mouth and throat.

Nature frequently deposits the morbid matter in the horns. If after the fourth day, when the violent symptoms abate, the head still is hung down more on one side than the other, sometimes the eyes and nose run much, and a heat is felt in the horn, while the body feels temperate, there is reason to think an abscess is formed in the horn; then let the horn be bored about two or three inches below the tip, without wounding the pith, and bore in the same manner on the opposite side about half an inch lower: cover these openings with a linnen cloth dipped in oil, and a piece of soft leather tied over, to prevent the air rushing in, and watch if any matter maketh its way through these openings, in which case the discharge must be encouraged; and if these openings be not sufficient to let out the matter, no danger will follow the making more holes, even at the root of the horn, with the former caution, if this be found to be the depending part of the abscess. There are instances of all the horny part having been thrown off, and the beast has recovered, which it otherwise might not, if the matter pent up in the horn had been absorbed, and circulated into the blood, occasioning such relapses as shall be mentioned hereafter. I have had the cattle bored in the first seizure, without any
bad

had effect, tho' I see no absolute necessity for this boring, before the time of suppuration.

Abcesses in the nose may be broke and discharged by sternutatories. *Asarum* leaves, dried and powdered, has been used successfully for that purpose at NORWICH *.

In the last stage, on the appearance of an *emphysema*, a swelling or puffing up of the skin, distended with a thin purulent sanies, and putrid air, as mentioned already, and which is the last effort of Nature to throw off the morbid matter; it will be proper to open the swelling, whether on the back, lengthways, or under any other part of the skin, according to the direction of the limb. The matter must be all let out by a sufficient incision, and the cavity filled with pledgits of tow, dipt in an ointment made of turpentine, yelk of egg, and myrrh powdered; over which a poultice of oatmeal and stale ale, sprinkled with spirits of wine, is to be applied very warm, and renewed twice or thrice a day. These dressings are to be continued till the ulcer digests properly, and then must be treated as other suppurating abcesses usually are.

After the *crisis* takes place in this and all putrid fevers, Nature generally discharges itself of part of the morbid matter, by unloading the intestines of the *feces*. In some cases a scowering ensues, which is not to be hastily

* See Gent. Mag. vol. xvii. p. 75.

stopt,

76 *Of the contagious Distemper*

stopt, though diligently watched and restrained, lest it weaken the beast too much. The following purge may be given, to cleanse the stomach and bowels.

VII.

Take of rhaponticum, or monk's rhubarb, one ounce; or of the best Turkey rhubarb, half an ounce; of sena, half an ounce; of liquorice-root sliced, and anise-seeds bruised, each one ounce. Boil these in two quarts of small ale, gently, to three pints; then strain the liquor, and give it the beast.

Let the beast drink water-gruel lukewarm, and be kept on dry meat, tho' sparingly; and at night give an ounce of electary of scordium, commonly called diascordium, in a quart or three pints of small ale warm.

But if, after the *crisis*, the beast is costive, and the skin be dry, harsh, and tight on the flesh; dunging may be procured, by giving in the evening a mash of bran, with a handfull of beans bruised, and an ounce of Epsom salt. However, I cannot avoid recommending the greatest exactness in observing that the *crisis* is over; for the least laxative medicine, or opening food, given at the *ακμῇ*, or height of the disease, and consequently in the former stages of expulsion and maturation, will certainly bring on a scowering, attended with fatal consequences, or at least very difficult to
be

be removed. An instance of this will be produced hereafter.

VIII.

Take of aloes, anise-seeds bruised, rhaponticum, or monks rhubarb, of each an ounce; or, instead of the rhaponticum, of the best Turkey-rhubarb, half an ounce; fena, and liquorice-root sliced, each half an ounce. Boil all these over a slow fire in two quarts of small ale to three pints: strain the liquor, and add half an ounce of soluble tartar, and give it warm to the beast.

When a purge has worked briskly, it will be proper at night to give the beast a quart of small ale warm, with a moderate quantity of spices, and bread crumbled in it.

Milch cows, recovering from the distemper, are not to be violently purged, especially if the owner be desirous the milk should return; to effect which, the beast must only be purged with the gentle drench already directed, N°. VII. and on the following days and intermediate ones from the purging. A quart or two of milk-pottage three or four times a day, together with good sweet hay, if in winter, and an hour's grazing in dry pasture morning and evening, if in summer, will be the likeliest method to recover the milk; beans, peas, and chaff, being too hot and dry, will not answer the purpose. The beasts must also be
al-

78 *Of the contagious Distemper*

allowed a sufficient quantity of warm water; or water-gruel, to drink as much as they chuse. It being only for want of proper fluids and good *chyle*, that the blood-vessels and the glands of the duggs do not secrete the milk as usual: these blood and secretory vessels being all along in a state of relaxation, whenever the tone of these vessels is recovered, and they are supplied with proper fluids, milk is produced anew. For the ease of the beast, and to encourage a flow of milk, the duggs should be washed twice a day with warm milk and water, or water with bran boiled in it, and clothes dipped in such warm liquor should be applied to the duggs about a quarter of an hour each time. To prevent any inconvenience from too much milk being in the bag at once, care must be taken, as soon as the bag appears to swell, to milk the cow; beginning by drawing the beast moderately, and continuing morning and evening by degrees, till the milk flows as usual. This method will secure the beast from a stagnation of milk in the duggs, and of course from abscesses forming in them.

In winter time the cattle, upon recovery, should not be turned out at once into the pasture-grounds, let them be never so dry: towards the middle of the day, in fair weather, turning them out two hours, and then bringing them in again, will gradually use them to the open air. In summer, morning and even-

ing will be the most suitable time ; for the heat of the sun, or excessive cold, may bring on other disorders. There are two, which, for want of this attention, many have fallen into, and have been lost. I mean a *vertigo*, dizziness or swimming of the head, and a *marasmus*, or consumption. The *vertigo*, giddiness, dizziness, or swimming of the head, so well described by Monf. DE LA METTRIE *, and which it would be unnecessary here to treat of at full length ; is, in the case before us, owing to a relaxation of the blood-vessels and nerves, and also to a fullness of blood, from the quick secretion of the juices into *chyle*, and the increase of blood ; whenever therefore the beast, turned out to graze, hangs down its head, the force of the circulation of the blood in the vessels of the eye, particularly on the inner coats, the *uvea* and *choroides*, is such, that it produces vibrations and undulations on the *retina*, whereon the object is represented : this agitated motion varies the distance and form of the object, creates a confusion in the nervous system, so that the beast, affrighted, cannot direct its motion, but frequently mistakes the way, and runs headlong to its destruction.

Cattle have often been found drowned in ponds, fallen into ditches or precipices, there killed or maimed, from no other cause but this *vertigo* ; nay, their keepers have been

* *Traité du Vertige, passim.*

80 *Of the contagious Distemper*

witnesses of these accidents coming on so suddenly, that they were not at hand soon enough to prevent the mischievous consequences.

To avoid this disorder, and likewise a frenzy, or *delirium*, which cold, by obstructing perspiration, and increasing the circulation of the blood might occasion, the first remedy I would propose is drawing two quarts of blood from the neck of the beast, before it be turned out to graze; not to put it out till a week after the *crisis*, and then a few hours at a time first, and only in the day-time, especially if the season be wet and cold, and the pasture in low and marshy grounds. All the while the beasts are out, a herdsman should be with them, to hinder their eating much grass, or hanging their heads down long together. It would be far preferable to begin by tying them up in the open air, and feeding them on dry hay in a close, making them walk also to and fro gently by way of exercise, and rubbing them down morning and evening with straw.

The following drench, given morning and night during a week, will strengthen and nourish the beast.

IX.

Take of sage, rue, and rosemary leaves dried, each one handfull; four cloves of garlick bruised: boil these in two quarts of small
ale

ale to three pints; then mix two eggs into the strained liquor, and give it warm.

Eggs and wine have been recommended by † COLUMELLA for diseased horned cattle. Our small ale, well hopped, will answer better the purpose of our climate than wine. Their small ITALIAN wine was well adapted to that warm climate, where the cattle must perspire more than in these kingdoms. Our small ale is both strengthening and nourishing, and also to be had at a much more reasonable price than even bad wine could be bought for.

Milch cows will be less liable to this disorder, if constantly milked twice a-day; and with dry-fodder, bulls, oxen, young heifers, and calves, will require gentle and moderate exercise.

A *marasmus* is a wasting or consumption of the beast, whereby so far from thriving by all the nourishing fodder it takes, that it daily grows leaner, and dies quite emaciated in a month or two.

Sometimes a husky cough, wheezing, and shortness of breath, at other times a constant scowering, accompany this disease. The first may be occasioned by infarction or obstructions, and may produce abscesses in the lungs; the latter, by remains of the sharp acrimonious and putrid matter lodged in the bowels. In both cases, if the beast be hot, and not

† Loco citato.

82 *Of the contagious Distemper*

very weak, take two or three quarts of blood from the neck, according to the strength of the beast, and to be repeated, if occasion requires.

For the cough and shortness of breath, let the beast have a drench, morning and evening, of three pints of tar-water; in which two eggs, beat up, be well mixed. Mashcs of scalded bran, common barley boiled, barley-water, milk-pottage, and sweet hay, are to be frequently given in the day-time, and all the liquors warm. The rowels must be continued till the beast be recovered, and if it had none before, one must immediately be made in the dewlap. The beast must be walked out every day, and housed at night with a loose covering.

The following balls may be forced down twice a day, with a drench of two quarts of bran-water, barley-water, or water-gruel, poured down after them.

X.

Take of liquorice-root powdered, flowers of brimstone, and brown sugar-candy powdered, each two ounces; elecampane-root, powdered, one ounce; balsam of turpentine, with anise-seed, half an ounce. Mix these powders all together; then add the balsam. Make these into balls with fresh butter, and cram down half the quantity in the morning, and the remainder in the evening, pouring
down

down any of the abovementioned liquors; or
dissolve the ball in the said warm liquor.

These must be continued some days. Should an abscess be formed in the lungs, it may be brought to suppuration and broke, by adding to those balls, saffron, myrrh, turmeric, and yolks of eggs.

After the use of these balls, it will be proper, in a few days, to purge the beast, before it be turned out to grass, with the purging drench N^o. VII. to which may be added, syrup of buckthorn, if a stronger purge be requisite.

For the scowering, after bleeding, give the purging drench N^o. VII. and afterwards at night the ale drench, with electary of *scordium*. Both the purge and drench are to be repeated, till the sharp humour is carried off, and at such distance of time as the strength of the beast may require. Then the tar-water, as beforementioned, with eggs, may be given twice a day: but should the scowering continue, a drench of burnt hartshorn, with a crust of bread and cinnamon, must be forced down. A quart of small ale, with a pint of red wine lees, has proved efficacious in this disorder. Dish-wash, or, which is still better, two quarts of fat mutton-broth should be frequently given. The beast must eat no grass, nor be drove, while the scowering is on. Malt-mashes, with bruised beans, or parched
G 2 peas,

84 *Of the contagious Distemper*

peas, are good ; and after the scowering, to prevent the beast from being hide-bound, the beans or peas may be given with scalded bran.

Rubbing and currying the beast will be of use.

Notwithstanding all imaginable care, the strength of the beast will frequently be so impaired by this disease, that after gradually wasting a month or two the beast dies, especially if the season be unfavourable.

Worms are often found in the stomachs of horned cattle, may produce fevers, and other disorders ; but as there doth not appear any symptom, whereby one should imagine worms have the least share in the production of this contagious disease, there can be no reason to administer medicines against them. Moreover, in pestilential fevers and the small-pox, after the *crisis*, in the first discharge of the excrements, worms are frequently observed to be voided dead ; and those persons who were troubled with them before, have, by the putrid disease, been totally freed from them : from whence may be inferred, that some degree of putrefaction is adapted by its fermentative heat to the purposes of hatching and nourishing them, while a more exalted degree of putrefaction kills them, and destroys their very nests, which come away like bags of jelly. I never met with any who saw worms voided by the distempered cattle, in this contagious
dis-

disease: after recovery, worms may be conveyed with their fodder into the stomach and intestines, and there may increase both in size and number: *mercurials*, *antimonials*, and tin, will best destroy them; but these medicines being improper, in every stage of the disease now under consideration, and worms a particular distemper, I shall dwell no longer on this subject.

C H A P. VI.

Observations.

A Faithful narration of facts, and repeated experiments, which are the proper vouchers, is the best authority to confirm and establish the method of cure. Without these, all the reasoning is no more than a vain and trifling hypothesis; the practice inconsistent, fallacious, and empirical.

Let the following observations, wherein are fairly related both good and bad success, serve as a test whereby to judge of the efficacy or insufficiency of the method proposed.

A considerable farmer in GODMANCHESTER, near HUNTINGDON, who, ten years before, had the contagious distemper among his cattle, and then lost seventeen head, was visited again in FEBRUARY last, 1756, by the carelessness of a neighbour, who having a cow dead of this disease, suffered her to lie twelve hours unburied, close to the wall which separated both farm-yards. Ten head of cattle were immediately seized: some were housed, others left to run about the rick-yard. All the stock were instantly bled; milk-pottage was given in plenty. Every one of the first ten died. Two of these, and two more, which died some days after, were the first carcasses I
ever

ever saw opened, and of which some account has been given in the chapter on dissections. Of those who fell ill subsequently to these, I observed that all had not the distemper in the same degree. I shall instance the cases in the order they happened.

A calf was seized with the usual symptoms, and was taken little notice of till the scowering came on, about the fifth day. It was suffered to run about the rick-yard, till being represented to the farmer, that the infectious matter might be lodged about the ricks, and the calf should be sheltered from the cold wind, he had the calf penned up under shelter at night. Vinegar-whey alone was given twice a day, the scowering stopt, the boils or pustules, which were very numerous, and began to flatten when the beast scowered, now filled again, ripened, and discharged much fetid purulent matter. The calf chewed the cud, and took its fodder, soon after the *crisis*, and recovered without giving any trouble.

A black cow, which had been suffered to run about, was, at the time of the *crisis*, taken with a violent scowering, and lay in the corner of a hovel with its head down to the ground. The cowkeeper gave her up for lost, tho' the symptoms had been all along very favourable. I had not then directed for this cow; but looking on the beast, I saw the nose and mouth were scabbed, the last dung was of a better consistence, and that the beast began to
G 4 chew

88 *Of the contagious Distemper*

chew her cud, and prick up her ears. Upon which I desired some dried peas might be offered her: she took a few. A mash of warm malt was the only thing recommended, and to keep her warm. Few boils were to be felt. Contrary to the opinion of the cow-keepers, and to the farmer's great joy, the cow recovered perfectly well. The scowering in this beast was only the critical discharge; and it is plain, that by keeping up her strength, and housing her, nature was supported, while she expelled that way most of the morbid matter.

A white cow, about eight months gone with calf, was seized with all the symptoms of poking and shaking its head, refusal of fodder, running at nose and eyes, stupidity, and groaned much. The stale was clear, the dung neither hard nor loose. This cow having been bled when all the stock were, no more blood was drawn; and, indeed, I saw no beast whose urine was so high-coloured, nor heat so great, as to require a second bleeding.

This cow was pegged, and strong digestives were applied to the ulcer; but the discharge therefrom was very small, as was also the running of the eyes and nose. The aperient drench, N^o. II. and vinegar-whey, were regularly poured down. She was constantly rubbed down from the time of housing; but seemed insensible of any relief. She began to scower on the fifth day, and died in few hours,
with-

without slipping calf. Upon opening this cow, the *uterus* seemed chiefly infected, where there were evident signs of gangrene. The rest of the *viscera* were highly inflamed, and disposed to gangrene; but yet were affected in a less degree than was observed in others, the *uterus* being the chief seat of the infection. The calf was dead, but perfect.

A large fine red cow, above eight months gone with calf, was seized at the same time, and rowelled in the dewlap. The discharge from eyes and nose was very great. She was housed and covered in the same stable with the former, but in a stall by herself, and was rubbed down constantly morning and evening; during which rubbing she stood up, as if relieved and invigorated by it. She took the drench, N^o. II. regularly, the vinegar-whey, and oatmeal-water. On the third day she threw up above a pint of greenish bile; the rowel swelled to the bigness of a two-penny loaf, and the cowkeeper feared it would come to a gangrene. But, seeing the great flux of putrid matter to that part, I directed only a softening pultice to be applied warm, and frequently renewed, which, encouraging the discharge, emptied the turgid vessels, and decreased the swelling in few hours. The running from this rowel was very considerable the whole time of the illness, and few boils were to be felt. To prevent a scowering and promote the pustules, the drench with Venice treacle was taken at nights, during the stage of maturation. This cow was
one

90 *Of the contagious Distemper*

one of those so fond of the drenches, that she always rose and looked towards the door whenever it opened, and never required any of the drenches to be poured down, but drank up eagerly every drop, licking the pail, to get whatever might stick to the sides. On the seventh day this beast began to chew the cud, the dung being discharged of a proper consistence. About three weeks after she slipt a dead calf, and recovered perfectly well.

In another stable a black cow was placed, who was treated in the same manner with the former: all the symptoms were regular and mild. On the day the *crisis* was expected, she began to chew her cud, and look brisk. The cowkeeper informed me that she had not dunged of four days, and feared she was hide-bound for want of dunging. I told him, that probably the critical time was not yet come; and, upon inquiry when the beast was first seized, I plainly demonstrated to the farmer, and others present, that the seventh day would not begin till the next morning, and desired we should wait till then, to see whether the cow dunged or not: but the cowkeeper's importunities, and my unwillingness to be accused of suffering the cow to be lost, determined me to consent, that the cowkeeper should that night give the cow a mash of warm bran, with a handful of bruised beans in it; hoping this would not relax till the *crisis* had taken place, being of a solid form, and likely
not

not to pass the stomachs till morning. The mash was accordingly made, and the cow had it that evening; but, instead of remaining any time in the stomachs, it passed so quickly like a purge, that in few hours a violent scowering came on, which lasted twelve hours; and notwithstanding all the astringent, sudorific, and opiate drenches poured down, the cow died.

Now this accident convinced me of the ill consequences which must attend purging before the *crisis* be performed *. The whole deposit of the infectious matter was not made in the external parts: nature was disturbed, the matter turned into another channel, by emptying the intestines, and inviting the absorbed matter to run off that way. Thus was the strength of the beast quickly destroyed, and medicines had no power of preserving life.

Supposing, on the other hand, this unlucky mash had not been given, and the cow-keeper's fears had been well grounded, a few hours would have determined whether the beast had dinged or no: it would then have been soon enough to give her a loosening mash, and, in case of heat, or being hide-bound, bleeding and proper diet would have

* Πεπτα φαρμακεύειν, καὶ κινεῖν, μὴ σπᾶ.

Concocta purgare, & movere non cruda.

HIPP. Aphor. sect. i. ver. 22.

92 *Of the contagious Distemper*

removed the complaint, without endangering the life of the beast.

Other beasts in the same farm were attended in the manner abovementioned, and did well, except one calf, whose case is not unworthy relation.

A brisk bull-calf, a year old, was seized with the contagious distemper, as the others had been, and should have taken the drenches; but the apothecary, who sold the ingredients, having at that instant none by him, a neighbour prevailed on the farmer's wife to give this calf some GODFREY'S Cordial; a strong opiate too frequently used, among the poor in this neighbourhood, in the small-pox, for young children in all cases; and, I may say, too often given to grown people, with as little judgment and benefit. However, the good woman's advice was listened to, and the calf had every night a dose of the cordial, and milk-pottage in the day-time. The first four days the calf stood up strong, and would have run about the stable, it was so brisk. The farmer's wife imagined a much shorter and cheaper method was now discovered to cure their cattle, than the one I had advised, and was not pleased at my desiring her to wait the event; assuring her, that if the calf did well, I would gladly embrace this discovery, and communicate it to those I should converse with.

I found

I found out, that this briskness observed in the calf, was only occasioned by the exhilarating power of the *opium*; and, when the effect of this medicine had ceased, that towards evening the calf grew dull. The running at the eyes and nose was inconsiderable; but attended with frequent irritations; that made the beast shake its head strongly. The breathing was difficult at times, the stale high-coloured, no dunging, and a moisture to be felt all over the skin and hair, attended with shiverings and cold.

These were the symptoms; some of which being contrary to those generally attending distempered cattle, encouraged the good women to flatter themselves with success; but how great was their surprize; when, on the fifth day, the calf suddenly died, notwithstanding the regular and constant administration of GODFREY's Cordial.

Whoever will recollect the effects of *opium*, which, by rarifying the blood, increasing the circulation, exhilarating the spirits, and distending the vessels, of course increases the inflammation in the first stage of this disease, and, if continuing the *plethora*, locks up the malignant humours, rather than promotes a cuticular discharge; must easily account for the effect of the cordial on this calf.

Dr. YOUNG *, in his excellent treatise on *opium*, has clearly stated the times when, in

* Sect. xxxv. and xxxix.

94 *Of the contagious Distemper*

the small-pox, and other diseases analogous thereto, *opiates* may be either beneficial or hurtful. He illustrates, very ingeniously, the great SYDENHAM's practice, and secures his doctrine from the imputations of such as may have miscarried by misunderstanding that sagacious physician's rules. I cannot do better than recommend the perusal of Dr. YOUNG's treatise to every one, who desires to be thoroughly and candidly informed of what relates to the effects of *opium*.

It is evident then, that the blood of this strong young calf was naturally viscid, and must, in this first stage, be rendered more so by the *opiate*; that, far from allowing nature room to assimilate and despumate the blood, by continuing the *plethora*, and the repeated increase of circulation, the serous part of the blood was forced out, the grumous became more glutinous, and the coats of the vessels unable, by their preternatural distension, to contract as usual, yielded to a stagnation that soon clogged up the springs of life.

In the stage of maturation, to forward the discharge of the morbid matter through the pores of the skin, the drenches, with Venice treacle, were given at night†; but then, in the day-time, vinegar- whey was plentifully poured in, to brace up and preserve the elasticity of the fibres. LANCISI recommends, with the same view, that *alexipharmics* should not be

† See p. 89.

given

given in this contagious distemper, without acids.

The distemper was communicated from this farmer's yard, near his house, to three cows, all with calf, which were kept in another yard belonging to him, at the other end of the street, without infecting any of the neighbouring cattle between both yards. It was therefore most probably carried by the cowkeeper, or servants, going to and fro, from the infected beasts to those kept separate, or by the dogs which followed them.

The first that fell sick was a red cow, eight months gone with calf. She no sooner began to hang her head down, and poke her neck out, than she was housed, well littered, and rubbed down. She was rowelled in the dew-lap; but did not discharge much by that drain. The running from the nose and eyes was very considerable; but the difficulty of breathing not so great as might have been expected. The medicinal drenches were given very regularly; and on the seventh day, the symptoms having been mild during the whole course of the distemper, the *crisis* was as favourable. About three weeks after, this cow calved a live calf, which was so weak it could not stand. Milk-pottage was instantly poured down its throat with a tea-pot; and, by this nourishment constantly and frequently fed, the calf is grown as strong, and likely to live, as any of the herd, without ever having had,
since

96 *Of the contagious Distemper*

since drawing its first breath, the least symptoms of the disease.

A black cow in the same yard was next seized with this contagious disease. She was immediately housed, and rubbed down; but was not rowelled, the cow-leach being out of the way: the medicinal drenches were also omitted, for want of ingredients; so that all the assistance she had was a constant supply of vinegar-whey and hay-water, both warm. The running of the eyes and nose was great, the difficulty of breathing and stupidity considerable at times: however, after four days costiveness, the *crisis* was performed by a gentle discharge of the *feces* on the seventh day; and having on the ninth day slipt a dead calf, about nine months old, she was recovered by means of malt-mashes, warm ale, &c.

A fine large cow, beautifully speckled with small red spots on a white ground, near nine months gone with calf, was running about the same farm-yard, at the time these two last mentioned cows were ill. I should have been glad this beast could have been moved from thence, fearing, I told the farmer, that from her big state and colour, she would not overcome the disease; but such removal being contrary to the laws, and liable to injure the neighbour's stock, I desired she might be penned up in a corner of the yard, distant from the stables where the other cows were sick,

sick, and out of reach of the morbid *effluvia* arising from them. This direction was neglected, and the cow was found frequently near the doors of the stables; but when she came within the smell of the distemper, would run away hastily; tho' she returned again, whenever she heard the noise of her companions. My prognostic was too soon verified; she was infected in the usual manner. On the appearance of the first symptoms she was housed and rowelled, and rubbed twice a-day. The running from the rowel, nose, and eyes was considerable, the breathing not very difficult. She took the drenches regularly, and was very brisk till the fourth day, that a weariness and dullness came on, succeeded by a stupidity, and frequent lying down. On the fourth day she was seized with a scowering, attended with shiverings and coldness of the limbs. The Venice treacle drench was given at night. In the day-time, vinegar-whey, and a decoction of bark in small ale. This treatment seemed to revive the beast: but on the seventh day the scowering returned, and a mucous discharge from the *vagina* indicated an approaching abortion. The Venice treacle drench was repeated, with one ounce of the compound powder of myrrh, to promote the slipping of the calf; but in few hours the cow died.

She was immediately opened; and no sooner was the skin cut, than a great quantity

98 *Of the contagious Distemper*

of putrid air rushed out, with such an intolerable stench as to oblige every by-stander to seek fresh air to breathe in.

The *membrana adiposa* was quite cleared from any fat in its celis; the flesh appeared, in some places, of a dark red, tending to a mortification; in others, of an intense red, highly inflamed: black clotted blood was found extravasated in the brain, in the ventricles and auricles of the heart, as also in the large blood-vessels. The nose, mouth, organs of respiration, stomachs, and guts, were in a state of ulceration: but the virulence of the disease shewed itself particularly on the *uterus*, or womb, wherein a perfect bull-calf was contained, and turned, as if nature had made a weak effort to expel it. The womb was gangrened, all its vessels greatly distended with grumous blood, and the waters containing the calf were putrid, and stunk much.

From this and the forgoing observations, it appears what little hopes are to be had, whenever any creature in a pregnant state is seized with a putrid disease. Whatever be the manner of its operation and progress, it is evident that the blood-vessels, always increasing their dilatation during the time of gestation, wherein they grow relaxed and less able to contract, are, by a putrid fever, still more distended, weakened, and deprived of their contracting power; so that consequently, wherever the parts have less strength, which commonly are such

such as are remote from the heart, and abound with *anastomoses* of blood-vessels, there will be the greatest stagnation of the dissolved blood, and the seat of the mortification.

Not only therefore are creatures, in a pregnant state, carefully to be kept out of the reach of all putrid disorders; but should any unfortunately be seized, the whole intention must be, not to weaken the creature by too violent or repeated evacuations; to avoid increasing the fever by too hot medicines; and, lastly, so to direct as to preserve the strength of the creature against the attacks of the disease, and especially at the time of abortion, if nature endeavours to expel the *fetus*.

C H A P. VII.

Of inoculation.

THIS practice, so providentially discovered, and blessed with all the success that human art can expect, derived from those distant climates whence the small-pox was communicated to us, can no longer be deemed a mean contrivance, nor selfish artifice, calculated only to enrich the faculty, and impose on the credulous vulgar. The preservation of thousands, and even the insignificant number of those that fail, considering the bold attempts of many ignorant persons who practise it, without being able to judge of or remove the least accident, must force the most obstinate sceptics to acknowledge the visible approbation of heaven, and the extensive utility of it to mankind. Would it not be a presumptuous madness, ungratefully to refuse the advantage of such a blessing, confirmed by the recovery of thousands; and obstinately expose our fellow-creatures to most dangerous symptoms of a contagious disease, when, according to all human probability, we may spare them a great part of these dangers? Providence will, in this attempt, as well as in other worldly schemes, frequently baffle the best

best concerted and most rational endeavours. Shall we not allow that power to the supreme Disposer of all, and frowardly blame ourselves? No! it is our duty to submit; and we are by no means culpable, if we acquiesce, after having done our utmost to secure a happy and successful event.

Repeated observations, both in the small-pox and the distemper now treating of, plainly prove, that whatever part is first attacked by those contagious *effluvia*, there generally is the chief seat and impression of the morbid matter, whether the infection be taken into the lungs, or into the alimentary duct. Besides vitiating these organs, the air we breathe is tainted, and the *chyle* carried into the blood is rendered putrid by this matter, both of which must greatly affect the fluids. Now though inoculation is by no means an infallible practice, yet it has this evident advantage attending its performance, that, without suffering the least particle of the matter to enter the lungs or stomach, a sufficient quantity is by the incision conveyed through the small bibulous vessels into the blood. The lungs, unaffected, receive and furnish the blood with pure air, that checks the heat produced by the contagion, and thereby prevents a dangerous inflammation. The stomach and intestines supply the blood with sound *chyle*, which, taken up by the red globules of blood, sheathes them, assists circulation, and prevents

102 *Of the contagious Distemper*

the comminution and dissolution of the blood, too frequently met with in the natural distemper. Moreover, the great afflux of matter to the incisions, which first denote the despumation began in the blood, answers all the good intentions observed in the natural way to attend issues, setons, rowels, or critical abscesses, by carrying off daily a large quantity of the morbid matter, and of the most virulent part, since it is capable of propagating the disease to any other subject inoculated therewith.

Nature also, much less weakened by inoculation than by a contagious disease contracted in the natural way, is by far the better able to perform the several alterations, and produce the *crises* in a more perfect and conspicuous manner. An advantage well known and highly esteemed, by all who are conversant with inoculation. Indeed, this operation should never be undertaken, without a very strict examination whether the subject is fit to receive the infection; and though many have not required much assistance, yet too great a security has endangered life, when help at hand might have prevented the misfortune.

Were it not for the constant intercourse among men, and that society requires to supply the wants of each other, that persons of all ages and both sexes should communicate and go from home, inoculation would not be so universally requisite. Indeed, in such distant places where there is little trade or communi-

munication but with neighbouring villages, inoculation is still unknown; the small-pox and measles rarely visiting the inhabitants, but when brought by a person lately recovered, who, by his breath or clothes, infects the rest. It is not surprising to meet in such places many aged people, who never had the small-pox.

There are also instances of persons, who to an advanced age have lived, and died, tho' frequently attending on the sick, infected with the small-pox, and other contagious distempers, without ever being seized by such infection. No doubt, their juices were not fitted to propagate this disease; and this seems highly probable, by the alteration brought on suddenly, when, through violent exercise or debauch, the fluids are vitiated, then the latent disease breaks forth.

Considering now the short life allotted to the cattle, and that they have the same chances abovementioned of avoiding the contagion, a question naturally arises. Of what use can inoculating the cattle be of? No one will think of bringing the infection into any place free from it, merely for the sake of inoculating their cattle; but if the contagious distemper be in the neighbourhood of a herd, or broke out so as to endanger the stock, by inoculating his cattle, with proper cautions, the grazier or farmer may secure his stock; at least, he will have a better chance by this

104 *Of the contagious Distemper*

operation, since he can house them before they fall sick, prepare them, and have due care taken, knowing the course of the distemper.

* Sir WILLIAM ST. QUINTIN, the rev. Dr. FOUNTAYNE, dean of YORK, and other gentlemen, have succeeded in inoculation. In HOLLAND it has both failed and succeeded. These gentlemen all inoculated with matter taken from the running of the mouth, nose, or eyes. Professor SWENCKE † mentions, that the beast from which he took the matter *was recovering of the distemper*; a circumstance to be attended to. Had matter been taken after the *crisis* from a tumour, boil, pimple, or scab, either on the back near the spine, or on the legs, the *pus* would have proved much more elaborated, subtle, and infecting, than that which flowing with the *mucus* of the nose, must necessarily be, in some shape, sheathed by this glutinous excretion, tho' I am well aware how putrid and acrid it is rendered by the disease.

That nothing may be omitted, which in any shape can contribute to the success of inoculation, due attention should be had with regard to the constitution and state of the beast, no less in this practice on the cattle than on the human species. Undoubtedly the young, healthy, and strong, bid fairer for a

* Gent. Mag. vol. xxiv. p. 549.

† Gent. Mag. vol. xxv. p. 160. Ib. p. 464.

good

good issue than the old, sickly, and feeble : each of these different constitutions demands a particular treatment, even in the method of preparation ; and, however trifling it may seem to many, the urging a necessity of preparation, I will venture to affirm, that I have seen the excellent effects arising from a rational preparation ; and that, if I have seen fatal events for want of preparation, I likewise have been witness to unfavourable turns, merely from an injudicious preparation.

Whoever chuses to be more satisfied in what concerns inoculation, I shall refer him to the undermentioned authors *.

The beasts which are sanguine, require moderate bleeding¹; those that have but a small share of blood, must have none drawn. The strong must, besides moderate bleeding and purging, be kept on a light diet, and their bodies kept open : thus scalded bran, with their hay and chaff, will cool them. The weakly, and such as are inclined to scower, must be kept on dry fodder, have peas and

* See Dr. MEAD on the small-pox and measles.

Dr. KIRKPATRICK's analysis of inoculation.

Monsieur DE LA CONDAMINE's letter on inoculation, translated by Dr. MATY.

Mr. BURGESS's letter on the same subject.

Dr. MATY's *Journal Britannique*, vol. xiii. xiv. xv. xvi. xvii. & xviii. In this last vol. see Dr. HEBERDEN's, and Dr. ARCHER's letters.

Lettres des Docteurs MATY & KIRKPATRICK ; vide *Journal Etranger*, par monsieur FRERON, pour le mois de fevrier 1756. And,

Dr. DANIEL COX's letter to a friend on inoculation.

beans

106 *Of the contagious Distemper*

beans given them to strengthen them. A mash of malt, or a quart of ale warm, with a few spices, will suit these best.

There is very little encouragement, if any, to inoculate cows with calves, and very young calves; yet if, through an absolute necessity, on the breaking out of the distemper in the neighbourhood, a farmer or grazier chuses to take the chance, tho' a bad one, he is not to blame; since, if the beast cannot go through the disease when inoculated, it certainly could not when seized unprepared in the natural way. The same will hold good as to young calves.

Whatever diseases the cattle may be affected by, if time will permit, they are first to be removed. Coughs, bloody urine, worms, &c. all are to be cured before inoculation, by the usual means directed in such disorders.

Mercurial and *drastic purges* are not only unnecessary, as preparatives for the cattle, but may also prove highly detrimental, by weakening them too much, and shaking their nervous system too violently. Their juices commonly require no other alteratives than attenuants, to correct the natural viscidities of their blood. Lenient purges, and mild diaphoretics, will carry off the peccant humours, either by purging or perspiration.

Æthiops mineral and *sulphur*, * Dr. HUXHAM'S *Æthiops antimoniatum*, or the ingenious

* Philosophical Transactions, vol. xlviii. part. 11.

Dr.

* Dr. MALCOLM FLEMYNG's balls of *Æthiops mineral*, with crude antimony, burnt hartshorn, and Venice or common *theriaca*, will attenuate and promote perspiration, and may serve both as preparatives and preservatives, if judiciously administered; but let it be remembered, that while these mercurial and antimonial preparations are used, acids of all kinds are to be avoided, even the vinegar-whey, lest, from safe and useful medicines, they be altered, so as to become corrosive and irritating.

Warm mashes of bran, with Glauber's or Epsom salt, lenitive electary, or syrup of buckthorn, will purge gently. Brimstone, only mixed with bran, will promote a gentle perspiration.

The cattle to be inoculated, are first to be well washed, rubbed dry, and then curried, to remove all the filth from the hair and skin: then they are to be placed in a spacious barn or stable, where the air may be temperate, and no cold can come to them. There they are to be prepared, according to the directions already given, foddered with good sweet hay, and watered with clear spring-water; and if the distemper be not near, they may be turned out into the air, near the barn or stable, where they may stay a few hours in the middle of the day.

* Dr. MALCOLM FLEMYNG's proposal to stop the progress of the distemper among the cattle, 1755.

When

108 *Of the contagious Distemper*

When it appears that the cattle are in perfect health, free from any infection, or other disease, brisk and lively, neither costive nor scowering, eating their fodder with a good appetite, and chewing their cud, then the operation may be safely undertaken, and from such time they must be confined in the barn.

Since wherever the infectious matter makes an impression at first, there is observed to follow the greatest flow of the contagious and putrid particles, separated from the blood; particular care must be taken not to inoculate near the vital parts, such as the heart and lungs; nor near the womb, if a cow with calf be inoculated; for though, to draw off the pestilential humour from the breast, rowels are applied, and properly, in the dew-lap, and, in other cases, beasts are frequently rowelled in the flanks; yet in this operation, on the contrary, as matter is inserted by these channels into the neighbouring vessels, those vital parts, or the womb, might become the chief seat of the disease, and the event prove fatal.

To prevent such accidents, the human species have been inoculated on the arms and legs, and now-a-days the arms are found sufficient. I would recommend that the cattle should be inoculated about the middle of the shoulder or buttocks, on both sides, to have the benefit of two drains. The skin is to be cut lengthways two inches, deep enough for the

the blood to start, but not to bleed much. In this incision is to be put a doffil or pledgit of tow, dipped in the matter of a boil full ripe, opened on the back of a young calf recovering from the distemper. It may not be amiss to stitch up the wound, to keep the tow in, and let it remain forty-eight hours: then the stitches are to be cut, the tow taken out, and the wound dressed with yellow *basilicum* ointment, or one made with turpentine and yelk of egg, spread on pledgits of tow. These dressings are to be continued during the whole illness, and till after the recovery of the beast, to promote the discharge, and then may be healed with the cerate of *lapis calaminaris*, or any other.

On the third day after inoculation, the discolouring of the wound, whose lips appear grey and swelled, will be a sign that the inoculation has succeeded; but the beasts, as professor SWENCKE informs us *, do not fall ill till the sixth day, which answers exactly to the observations daily made in the inoculating children. Yet the professor adds, that on the third day a costiveness came on, which was removed by giving each calf three ounces of Epsom salt.

No sooner do the symptoms of heaviness and stupidity appear, than the beasts must have a light covering thrown over them, and at night fastened loosely. They must be

* Gent. Mag. vol. xxv. p. 464.

rubbed

110 *Of the contagious Distemper*

rubbed morning and evening, and curried, till the boils begin to rise. Warm hay-water and vinegar-whey must be given plentifully. Should the beast require more nourishment, dry meat, such as cut hay, with a little bran, may be offered. I should be very cautious in giving milk-pottage, even after the boils and pimples were all come out, for fear of bringing on a scowering: however, this caution is proper, that whenever milk-pottage be given, the vinegar-whey is to be omitted, for obvious reasons.

In cases of accident, the same attention is to be observed in the disease by inoculation as in the natural way, and the medicines recommended are the same I would use; but by inoculation, there seldom is a call for any: so favourable does the distemper proceed thro' its several stages.

The *crisis* being performed, it will be proper to purge the cattle, to air them by degrees, and to have the same regard in the management of them, as is laid down in the chapter on the method of cure.

C H A P.

C H A P. VIII.

Of the means to prevent the infection.

THE means to prevent this dreadful calamity are twofold : first, to prevent the admission of this disease into these kingdoms. Secondly, when unfortunately the contagious distemper is once received, to prevent the spreading and check the progress of it.

I do not call to mind any regulations or orders made by the legislature, relative to the importation of cattle and hides. Since it is almost universally acknowledged, that either by live cattle or raw hides the distemper was communicated to these islands, with due submission, I would propose to the consideration of our rulers, that the same regulations and orders be observed, for the prevention of this ravaging distemper, as are directed to guard us against the communication of the plague. Thus instructions may be sent to our consuls in the several foreign sea-ports, requiring an immediate advice whenever the distemper appears in their neighbourhood ; whereupon an order might be issued, absolutely to forbid, under a pecuniary penalty, the importation of any live cattle, raw or other hides, from such infected places. All vessels should be provided

112 *Of the contagious Distemper*

vided with a bill of health, and a certificate of their being free from infection : besides, if required, a quarentaine should be performed. The tide-waiters, or other proper officers of the customs, should be directed carefully to visit all ships coming into our ports from the countries where the distemper rages ; and, in case they found any horned cattle or hides on board, instantly to cause them to be thrown overboard, and sunk into the sea, together with horses, hogs, sheep, dogs ; in short, such animals as may be liable to convey the infection by their hairy or woolly coverings, and all the litter and hay contained in the hold where they breathed. The place should be purified with steams of hot vinegar, and the fumes of boiling pitch or tar, and the smoak of juniper-berries, frankincense, or tobacco.

Notice should be also publicly given, to prevent any grazier, farmer, butcher, or other person concerned with cattle, from going on board, lest they should bring away the distemper in their clothes. And tho' the sailors dress may be less apt to retain the contagion, because of the tar and pitch sticking about them ; and their frequent smoaking tobacco ; yet, for the greater security, before they come on shore, their clothes should be washed with warm water and vinegar, and also be smoaked with the fumes of those things just mentioned.

GREAT

GREAT BRITAIN and IRELAND are so well stocked by providence with cattle, to supply all our purposes, that such seasonable prohibition can in no way distress nor detriment any one. The love of what comes from afar, and whose chief excellence is the rarity and dear purchase, cannot, indeed, be gratified at such times; but, certainly, the plenty of various sorts of horned cattle in these kingdoms will allow sufficiently for the mixing of the breed of different counties, and for their several uses intended, without hazarding the total destruction of our cattle, merely to satisfy whim, fancy, or, what is still worse, an illicit gain.

Notwithstanding such precautions be taken with the utmost care and diligence, it may so happen, that private interest prompting a person fraudulently to import distempered cattle or hides, he may succeed in the attempt, and introduce the disease into these islands. Could the offender be discovered, a severe penalty should be immediately levied by the neighbouring justices of the peace, and publick notice given of the breaking out of the distemper, that graziers may avoid driving cattle within three or four miles of the village or pastures where the diseased cattle are. The acts of parliament, and orders of council, to prevent the removal of cattle from the county infected, and the holding fairs or markets, should be strictly put in force. And when-

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114 *Of the contagious Distemper*

ever this prohibition should be taken off, and the cattle allowed to be removed and sold, after keeping them apart forty days; the certificates of health should not be admitted, without the concurring testimony of the officiating minister of the parish, and the parish-officers. This might, in some measure, obviate the too frequent perjuries, which arise much oftner from the ignorance and stupidity of the swearer, than a design of imposing. Then a poor ignorant servant would not call God to witness to the truth of he knows not what; for it has more than once happened, that a country-fellow has come to market with beasts, or hides, asked for a paper, to sell his cattle or hides, at the stationer's; which certificate he has brought to the justice, and taken his oath as to the truth of the contents of this paper, without ever knowing one word of the matter, neither being able to read print nor writing, much less acquainted with the nature of an oath. Indeed, the too common and hasty manner in which oaths are administered, will sufficiently account for the inattention of the vulgar and ignorant, who look upon the clerk's muttering a few words, and kissing the Bible, as mere matters of form; and I wish this may not be the case in many other instances.

But to avoid still more the taking false oaths, and also the bad effects of ill-judged good-nature, which might determine some

persons to wave signing the certificate, other-ways than in a vague and loose manner; or perhaps out of a principle of charity, to sign it without much inquiry; inspectors should be appointed, whose attestation should be corroborated by the minister and parish-officers. These inspectors should be persons well acquainted with what concerns the cattle, and have been conversant with the disease; such as farmers, graziers, or butchers. They should be chose and directed by some board, in the same manner as the officers of the excise; be paid a reasonable salary by the government, and sent in such numbers, wherever the disease breaks out, as will be sufficient to do the duty required. Moreover, to prevent all favour or partiality from connections, or influence, like the officers of excise, their quarters should be changed whenever the board thought proper; and no inspector should serve in the county he is a native of, or is settled in.

The office of such inspectors should be at seasonable and regular hours to visit the cattle, either ill of the contagious distemper, or suspected of infection, to see that none be removed to any other place; that the carcasses be buried, as also the litter, dung, &c. and likewise that all the acts of parliament, and orders of council, be duly executed; and in case of failure, to report the transgressor of the laws to the board, who would prosecute such

116 *Of the contagious Distemper*

offender according to the power lodged in them: care being first taken, on the appearance of the distemper, to publish in every parish church the regulations to be observed.

* Dr. WALL has recommended pest-houses or infirmaries for the cattle; and doubtless, on the appearance of this distemper in these kingdoms, it would behove every county to have some huts or hovels erected on a common heath, at least three miles from the high road and from any herd; where any cattle brought to sale might be kept some time, and even perform a quarantine, if the herd came from any infected part. These hovels should be made of such light materials, though sufficiently thatched to keep the sick cattle warm; that, in case of infection, they might, when no longer of use, be destroyed and buried without putting the county to too great an expence. Towards defraying this, each head detained there might pay a small trifle.

But as it would be impracticable sometimes to remove distempered cattle to this heath, without endangering a neighbour's stock by driving the diseased beasts near his, or that the distance would not allow of such removal; some remote pasture, part of a common not used, or heath, in every parish, and the least liable to communication, should be allotted to build small huts or hovels, which would hold

* Gent. Magaz. vol. xxi. p. 72 and 126.

not above three beasts at most, and in which only two sick ones should be put.

Immediately on the first seizure of a beast, it should be gently drove to this post-hovel, and all such that, of the same herd, should afterwards in the like manner; for were the beast to remain among the herd till the time of suppuration come on, it will then be too late, the beast will be endangered thereby, and the herd, in all probability, totally infected. Servants must be appointed to the sole care of these separated cattle, and should have a frock, linnen-cap to cover all their hair, and oil-skin spatterdashes, while they mend these hovels; which dress is to be, together with the hovels, &c. either buried, or not brought home until well smoaked with rimstone and tobacco, after a thorough washing with soap-suds first, and then vinegar. As this dress to be left at some convenient place in the mid-way, there would be less chance of carrying the infection than dressing and undressing nearer the sick cattle, or home; and it cannot be expected, unless in case of violent illness, that the servants should all constantly attend day and night.

* Dr. MEAD prefers the burying all goods used, or clothes wore, which have been infected, preferably to burning them, lest the infectious particles should be dispersed by the

* On the plague, p. 120.

118 *Of the contagious Distemper*

smoak, and thereby the infection conveyed; two instances of which the doctor relates. The first quoted from *MERCURIALIS, who says, "the plague at VENICE was increased by burning infected goods. The second instance is, a poor man dying of the small-pox at SHIPSTON in WORCESTERSHIRE, whose clothes, and the house he had been removed to, on a hill a small distance from the town, were ordered to be burnt; and the smoak being drove by the wind upon the houses on one side of the town, in a few days eight persons fell ill of the small-pox. So dangerous, adds the learned doctor, is heat in all kinds of pestilential distempers, and so diffusive of contagion." The burying therefore of the huts or hovels, with the thatch, litter, and the clothes wore by the attendants, will prove a safer method than burning, provided they are buried of a sufficient depth.

Thus far these directions point out the means of preventing the distemper from being brought into these kingdoms, or into any particular district: how to preserve the cattle from an approaching disease broke out in the neighbourhood, how to stop its progress in a herd, and how to guard against communicating the infection to the neighbour's stock, are next to be considered.

* De pestilent. cap. xxi.

The instant it is known the contagious distemper is broke out in a village, pasture, or neighbouring town, all farmers and graziers should be careful to remove their stock * as far distant from the infected place as possible ; but should the wind blow from that side towards the pastures the sound cattle are designed to be put in, it will be most proper either to drive them some other way out of the course of the wind, or shelter them under cover in barns, stables, or hovels, where they may be detained till the wind has shifted.

But supposing the air of the village be tainted so, that there be little probability of the cattle escaping the distemper, notwithstanding the above precaution ; and that the farmer will not venture on inoculation, but will take his chance of the stock receiving the distemper in a natural way ; then such steps are to be taken which are the most likely to procure a favourable illness, if it cannot be avoided.

Nothing conveys the distemper quicker, than the putrid steams brought by the servants clothes, who, led by curiosity alone, go to visit the infected cattle. They should therefore be strictly forbid going near such beasts, or even conversing with those who look after them. Besides, they should be directed to drive the cattle so gently, that they be not heated by over-driving. The cattle should be

* COLUMELLA.

120 *Of the contagious Disemper*

continually watered twice a-day, their skin and hair kept clean by rubbing and washing.

Bleeding and purging the cattle, so far from proving of use, has not prevented the disease; but, rather, the symptoms have been more violent in some who were bled and purged.

Tar-water has been given as a preservative, and is said both to have succeeded and failed. Its heating and glutinous quality, I should apprehend, would rather increase the viscosity of the blood; consequently render the disease still more dangerous.

Mr. WILLIAMS, a gentleman of great merit and veracity, who many years practised surgery and pharmacy with deserved and just applause in this county, communicated to me a receipt, which had been used as a preservative; but ingenuously owned, that it had frequently been unsuccessful. The prescription is a decoction of madder and turmeric-roots, fœnugreek-seeds, feverfew, moth-mullein, sage, and rue, boiled in ale; and to the strained liquor add two ounces of (*ostracites*) kate-shells, clean washed, calcined, and powdered fine. This to be given for a dose. The ingredients for the decoction are well adapted, and most of them were made use of in the cure of infected cattle. But the *ostracites*, directed with a view to absorb and correct the acidity supposed to irritate the first passages, and raise this fever, occasioned the medicine to fail in several subjects, on account of its
clogging

clogging quality. And besides, the *ostracites*, though abounding more with marine salt than several fossil bodies, and much less than the oyster-shells, is no sooner calcined than it becomes almost as great a *septic* as chalk, or prepared *testacea*; therefore this preparative will prove useless in *some* constitutions, since the blood must necessarily thereby be disposed to stagnation and putrefaction, before the putrid contagion seizes the beast. Mr. WILLIAMS was so well convinced of this effect from the *ostracites*, that he ordered the farmers not to give it during the fever.

* Dr. HUXHAM's *Æthiops antimoniatum*, and † Dr. MALCOLM FLEMING's bolus of *Æthiops* and *antimony*, are the best mineral preparatives and preservatives I know of, most likely to break the viscosity of the blood, and promote perspiration.

These excellent chymical preparations, so well calculated for the purpose in hand, are not by any means to be given to an infected beast. The doses, when proper to be given, are to be formed according to the age, strength, and constitution of the beast; and as it is absolutely impossible these medicines should be prepared at home by the most in-

* HUXHAM's essay on antimony, or Philosoph. Trans. vol. xlviii. part. ii.

† FLEMING's proposals to stop the progress of the distemper among the horned cattle, or Universal Magazine for Oct. 1755.

122 *Of the contagious Distemper*

telligent farmer or grazier, I refer them to their apothecary, who doubtless will humanely direct his neighbours, as to the proper time of administering such medicines, the dose and form they are to be given in, according to the directions laid down by the abovenamed authors in their several tracts.

* LANCISI has recorded some forms of medicines, which “ were beneficial before the contagion seized the beasts, but proved unsuccessful during the illness. He says he has placed them in his book, that they may be of use whenever the disease shall appear milder.”

I shall translate some few of those ITALIAN prescriptions, that seem the best adapted for the choice of my countrymen.

A remedy to preserve the borned cattle.

Take half an ounce of brimstone, half an ounce of brown sugar, a little common oil, a little salt; and make up the whole into a solid form, with strong vinegar, or into a mixture, putting also some juniper-berries bruised, and a white onion sliced very thin, so as to have a porringer full of this

* Formula remediorum quæ utilia quidem deprehensa sunt priusquam morbus pestilens evasisset, postea vero irrita fuerunt. Hic autem afferuntur, ut si quando benignior ægritudo recureret, usui esse possint. LANCISI de bovillâ peste, part. ii.

com-

among the Horned Cattle. 123

composition, which will be sufficient for one beast; and then, after this medicine, another porringer full of pure vinegar is to be given to drink down immediately.

Rimedio per preservare gl' animali bovini.

Si piglierà zolfo mezz' oncia, zacchero rosso mezz' oncia, un poco d'olio commune, un poco di sale, ed il tutto si comporra, ò mescolera con aceto forte, ponendovi entro anche bacche di ginepro ammaccate, e cipolla bianca sottilmente tagliata in modo, che formi una scodella di composizione, quale servirà per un' animale solo; e poi dopo questo medicamento se gli darà subito a bere dietro un' altra scodella d'aceto puro.

Another remedy, used when the disease was more violent.

Take as much vinegar and water as an ox will drink at one draught, flower of brimstone, common oil, garlick, Venice treacle, salt, juniper-berries, and barley-meal, and boile them all up together: when it is cold, give it to a sick beast to drink.

Altri remedi praticati ne' mali più acuti.

Si piglierà aceto, & acqua quanto basti per farne la bevanda ad un bue. Fior di zolfo, olio com-

124. *Of the contagious Distemper*

commune, aglio, triaca, sale, bacche di ginepro, e farina d'orzo, il tutto si fa bollire insieme, e raffreddato si da al bue infermo in bevanda.

Another drink.

Take one ounce of flower of brimstone, three ounces of brown sugar, four heads of garlic; wine, and vinegar, each a pint, and mix all these together: it will make a drink for an ox.

Altra bevanda.

Si piglià fior di zolfo un' oncia, zaccbero rosso oncie tre, aglio capi quattro, vino, ed aceto mezzo boccale, il tutto si mescola insieme, e serve per la bevanda d'un bue.

A perfume or fumigation to preserve the stables from infection, whether the cattle be sound or ill.

Frankincense and juniper-berries, of each equal parts; and two heads of garlic.

Profumi de farfi per preservativo nelle stalle delle bestie sane, o inferme.

Incense e bacche di ginepro, parti eguali, e due capi d'aglio.

Another perfume.

Of fennel-seeds and juniper-berries, each six ounces; of frankincense, three ounces. The above perfumes are to be burned slowly, keeping the stable shut very close.

Altro profumo.

Semi de finnocchio nostrale, bacche di ginepro oncie sei per sorte, incenso oncie tre. La sudetti profumi si fanno abbruciare lentamente, tenendo ben chiuse le stalle. LANCISI loco citato.

These prescriptions may point out the end proposed, and furnish hints for using such other officinal medicines as will answer the like intentions of breaking the viscosity of the blood, promoting perspiration, and expelling, by very active and volatile fumes, foul air, impregnated with the pestilential *miasmata*. The ancient writers on agriculture, recommended the same medicines which LANCISI speaks of. CATO orders, as preservatives from infection, salt, bay-leaves, leeks, garlic, frankincense, fennel, rue, white vine-stalks, all bruised, and given mixed in wine *.

COLU-

* Bubus si morbum metues, sanis dato salis micæ iij, laurea folia iij, porri fibras iij, ulpici spicas iij, allii spicas iij, thuris grana iij, herbæ sabinæ plantas iij, rutæ folia iij, vitis albæ caules iij, vini sextarios iij. Hæc omnia sublimiter legi, teri darique oportet. Jejurus sit qui dabit.

Ter

III. Of the dangerous Distemper

In this distemper the giving fen-
nel, pepper, cinnamon, and the blood
of a young rooster with wine †: I ob-
serve to be a preservative here, but even in
the most dangerous cases.

But the distance from an apothecary
may be so great, that the distemper brought to
this stage, that he never would be desirous
to bring home any medicine directed for
his cure, which might be administered until
some remedy more powerful could be
procured. For this purpose I would recom-
mend the following, which being composed
of ingredients efficacious during the infection,
and the strength of nature will warm discus-
sion and remove, it removes obstructions
and cures infection.

IV.

Take two heads of garlic, bruised; of
crystallized brimston flower of brimstone, and
savour sugar each half an ounce. Mix these
with a sufficient quantity of barley-meal
and so other make the whole up into a soft
ball, which is to be given every morning fast-
ing, with the following trench after it.

For the most of the patients who are here. Ita divi-
dita cum se invicem decoque continem absumas. Bolus
quis & qui dabo pater ut utique sublimiter fient, vas
hinc dabo.

† Cord. de la. lib. 1. cap. 1.

XII.

XII.

Take sage and rue-leaves, of each two handfuls; chamæmile-flowers, one handful; grafs-roots, and horfe-radish-roots, of each one ounce; juniper-berries bruised, half an ounce. Boil these in three pints of vinegar-whey, till it decreases to one quart; which strain, and give lukewarm.

If any beast, of a weak constitution, should require a more strengthening medicine, ale may be used instead of the vinegar-whey, and Venice treacle may be added to the ball. Dry fodder, clear spring-water, and moderate exercise, are strictly to be used, and the effects of cold carefully avoided.

All authors agree with regard to the benefit arising from setons and issues, in case of an approaching contagion; it would be needless, therefore, to quote them. Since nature, accustomed to an outlet, will certainly discharge, through that opening, whatever humour is obnoxious, can there be the least hesitation whether the cattle should be rowelled or not? If they escape the infection by means of the medicines just described, or any other means, a rowel or two may have given vent to any bad humours, and cannot have done them any harm; but should all precautions have failed, and the cattle thus rowelled should receive the infection, then this considerable advantage will

128 *Of the contagious Distemper*

will of course follow, that the virulence of the distemper shall flow to those parts, and be discharged through these outlets. Besides, as rowels made at this time are to be placed in the shoulders or buttocks, for the same reasons as they are directed to be made in those parts for inoculation, the vital organs will be less liable to suffer by an overload of putrid matter, which the rowels carry off at some distance.

Yet these preservative medicines may fail: the smoak of tobacco, or the perfumes, may not keep off the infection, if conveyed by an infected beast brought into the herd, or by the herdsman or cowkeeper's clothes. In the first case, the beast, lately brought into the stock, and, perchance, because it has just recovered from the disease, is to be instantly removed from the herd, and put in a pasture apart, where it cannot infect any more †: such as have received the infection from this beast, are immediately to be separated from the rest, and treated according to the method of cure already laid down. Likewise cattle, receiving the infection from the pestilential matter

† pestilentia, quæ cum in gregem incidit, confestim mutandus est cœli status & in plures partes distributo pœcore longinquæ regiones petendæ sunt, atque ita segregandi a sanis morbidî, ne quis interveniat qui contagionem cæteris labefaciât. Itaque cum ablegabuntur in ea loca perducendi sunt quibus nullum impascitur pecus, ne adventu suo etiam illis tabem afferant.

COLUMELLA, lib. vi. cap. v.
brought

brought in their keeper's clothes, are to be separated on the first symptoms of the disease breaking out upon them. Should they recover, they must not be drove among the sound ones who never had the distemper; nor in such pastures or places where, rubbing against the hovels, rails, or fences, they may break the pustules, or rub off the scabs, so as to leave some of the matter sticking on wood, straw, hay, or any substance whatever, which may retain it, and communicate it to fresh cattle that come after.

The carcasses of such beasts as die of this contagious distemper, are directed, by an order of council of the 17th of *October*, 1747, to be buried within three hours after death. Time should be allowed for the carcass to cool, and the humours to stagnate, lest the pestilential *effluvia* should fly off in so great a quantity as to taint the air the carcass is to pass through. When cold, the carcass is with all convenient speed to be carried out to the pit; but not drawn on the ground, lest a sharp stone, or any cutting thing, should open the abscesses or pustules, whereby the contagious matter might be let out. To prevent the like bad consequences, I must publicly disapprove of cutting and slashing the hides, to render them unfit for use, and likewise still more of dismembring the carcasses to bury them with greater ease. Such incisions, and taking off the limbs, only serve to give vent

130 *Of the contagious Distemper*

to all that putrid air observed puffing up the skin in the last stage of the illness. Let the carcass then, whole and covered, be conveyed to the pit, which should be dug at least eight if not ten feet deep *, and wide enough to receive the carcass, laying on its side: sharp flints may be next thrown in, over which some mould, and then a layer of clay about two feet thick, which is to be well rammed down, to close the mould to the carcass, and force the flints into the hide: the clay will prevent the putrid steams from issuing out; then the remainder of the earth is to be put over carefully, ramming it down hard several times. Some loose mould should be left at about half a foot's depth from the surface, to receive the seeds of grass, or any aromatic herbs proper to be sowed therein, according to † FORESTUS; who relates, that, after the plague at DELFT in HOLLAND, the physicians advised the throwing a large quantity of earth over the graves, and the sowing grass and several other seeds, that, as they grew up, they might close up all the small openings, and prevent the eruption of the pestiferous matter. ‡ LAN-CISI adds a very proper direction, that the

* Usque eo etiam mortua cadavera ultra fines villæ projicienda sunt, & altissimè obruenda sunt sub terris: ne forte ipsorum corporum interna sanorum contingantur & pereant. VEGETIUS in Art. Veterinar. lib. iii. cap. II.

† FOREST. lib. vi. obs. 25. in scholio.

‡ De Equorum Epidemia.

earth

earth should be heaped up over the pits, lest, when the carcass decays, and the earth subsides, there should be a hollow where the rain might settle, gull, and loosen the mould, which then would yield a passage to the putrid *effluvia*. And here I must caution our farmers against a practice too frequently met with among them; I suppose, only with a view of convenience to their servants, the place being near at hand, or to avoid breaking up any grass-ground; I mean the burying the carcasses of infected cattle in their rick-yards. The consequence has been, more than once, that these carcasses being buried not above three or four feet deep, and sometimes but two, have rotted, and emitted such a stench, that it has drawn the dogs and hogs to these pits, who have immediately scratched or grubbed up the putrid flesh, which they eat; letting at the same time the poisonous exhalations fly out, which, fixing in the hair of these creatures, and partly to the ricks in the yard, have spread the infection all over the neighbourhood where the dogs or hogs went, and tainted whatever fresh stock was turned into the rick-yard.

The hay, straw, or litter, the infected beasts have breathed on, are not only to be removed and buried, but the stables, hovels, or barns should be cleaned thoroughly; all filth and dung put under ground; likewise milk drawn from the sick cows, or blood, if any, should

132 *Of the contagious Distemper*

be taken away. After the distemper is over, stables, cribs, mangers, racks, are all to be washed, first with hot soap-suds, and afterwards with vinegar and water. The walls of plaster, or clay, are to be first scraped; then a fresh coat of plaster or clay laid on, and, when dry, the walls are to be washed with lime-water. Wet gunpowder, pitch, tar, brimstone, tobacco, frankincense, juniper and bayberries, or the perfumes already mentioned, should be burnt, and the smoak confined in these stables, more than once. Besides, no beast should be put into these stables, barns, or hovels, within two or three months after they have been cleared from the infection.

The cattle, recovered from the distemper, should be detained a few days after recovery in convenient barns or stables, that they may be thoroughly rubbed, curried, washed with vinegar and water, and perfumed two or three times, to destroy the pestilential *effluvia* as much as possible, before they are turned out into the pastures, and to prevent their infecting other beasts.

Killing the cattle, on the first appearance of the symptoms, has been advised and ordered; but many beasts having been hastily killed, who probably were never infected, and to the imposition of many persons for the sake of the bounty, as also lest the destroying such numbers should produce a scarcity of cattle, that
order

order has not been strictly enforced, and the people have been allowed to try if their cattle could be saved by medicines. Notwithstanding the rigour of the edicts issued by pope CLEMENT XI. on account of this distemper, his physician * LANCISI advises his countrymen not to omit trying some method of cure, if it be possible for medicines to remove the disease.

Thus have I laid down the several methods which seemed to me the most likely to prevent this fatal calamity from visiting our herds, and have been found beneficial in different countries. There remains only one more to be recommended, which, being a rational duty, has been universally received by all people of whatever nation or religion, according as they were enlightened. The Heathens made sacrifices, and oblations to their gods, that they might appease their wrath and avert the disease. The Christians have called upon their Creator in such times of visitation, according to the rites and ceremonies of the church they belonged to. Our prelates have drawn up a form of prayer to be used all over these kingdoms at the time of such distress, to implore the Divine Assistance and Protection.----A method on all accounts expedient, towards the

* LANCISI, part. iii. cap. xi.

134 *Of the contagious Distemper, &c.*

success of our own endeavours; since we cannot reasonably expect a good event in the use and application of *second* causes, 'till we have secured the concurrent favour of HIM whom we justly acknowledge to be the *first*.

F I N I S.

E R R A T A.

Page 6, in Note, line 3 from the bottom, for *februm* r. *februm*.

Page 8, Note, line 7 from bottom, for *in* r. *ni*.

Page 40, line 22, the semicolon (;) not after *rumen*, but after *ancients*.

Page 48, Note, line 2 from bottom, for *Malle* r. *Mellier*.



AN
S S A Y
ON THE
B I T E
OF A
M A D D O G.

By DANIEL PETER LAYARD, M. D.
Physician to Her Royal Highness the Princess Dowager of
WALES, Member of the Royal College of Physicians
in LONDON, and of the Royal Society.

*Conveniens homini est, hominem servare voluptas,
Et melius nulla quæritur arte favor.*

OVID. Epist.

The THIRD EDITION.

LONDON:

Printed for J. and F. RIVINGTON, in St. Paul's Church-
yard; and T. PAYNE, at the Mews-gate.

M.DCC.LXVIII.

2

E R R A T A.

Page 51. line 11. *for distant ages, read distant place*
p. 98. lines 12 and 18. *for full moon, read new moon*



TO
Sir EDWARD WILMOT,
BARONET, M. D.

Fellow of the Royal College of Physicians in LONDON, and of the Royal Society, First Physician to His Most Sacred MAJESTY, and Physician General to the Army.

SIR,
TO reverence patrons while living, and to hold their memory in the highest veneration after this life, is the duty of every open hearted and grateful mind.

The publication of this Essay, affords me the favorable opportunity of expressing in the strongest manner, my gratitude for the unmerited favors I re-

A 2 received

iv DEDICATION.

ceived from that no less generous and humane MÆCENAS, than learned and successful physician Doctor MEAD.

Like many others, at my first setting out in practice, I found in him an encourager, who far from superciliously despising the inabilities and want of experience in youth, felt a pleasure in animating and inciting them to cultivate that emulation and zeal, which by their application they shewed for the study of whatever might prove useful.

The benevolent friend to mankind, in this as in other instances, strictly adhered to his MOTTO, and proved that he was formed NON

DEDICATION. v

NON SIBI, SED TOTI.

Accept SIR of this imperfect work, as a token of that respectful remembrance I shall ever retain for Doctor MEAD, and of my true regard for all his family.

That YOU, SIR, whom two succeeding monarchs have highly honored and deservedly distinguished, may continue to enjoy the royal confidence and the full possession of whatever you can desire, is the hearty and sincere wish of

SIR,

Your most obedient and

most obliged humble Servant,

London March
28, 1762.

DANIEL PETER LAYARD.

1. The first step in the process is to identify the problem or issue that needs to be addressed. This involves gathering information and understanding the context of the problem.

2. Once the problem is identified, the next step is to define the objectives and goals of the project. This helps to clarify what needs to be achieved and provides a clear direction for the work.

3. The third step is to develop a plan or strategy to address the problem. This involves breaking down the problem into smaller, manageable tasks and determining the resources and timeline needed to complete them.

4. The fourth step is to implement the plan. This involves putting the strategy into action and monitoring progress regularly to ensure that the project is on track.

5. The final step is to evaluate the results of the project. This involves assessing the outcomes against the objectives and goals, identifying any lessons learned, and determining the next steps for future projects.

[illegible]

THE
P R E F A C E.

WHENEVER a calamity of any kind befalls society, it is natural for every individual to join in the alarm, and to enquire into the means of lessening, or avoiding the danger.

The subject of the following essay, although examined and treated of, by many authors of the most respectable character, is of too near and general concern for mankind to remain satisfied with the doubtful and apprehensive state in which they were left, through the uncertain effects of the cures hitherto directed. Many remedies have proved successful, which in other constitutions or climates failed. And the

only method to be depended upon seemed of too recent a date, for the universal adoption of that practice, without a confirmation of it's utility by repeated facts. It therefore behoved every one, whose profession was the healing art, to examine into the particular nature of this disease, the reasons why it had been so long undetermined in it's qualities and cure, and to remove such prejudices as were the strongest obstacles to such a desirable end.

Notwithstanding the highest veneration and most sincere respect was paid to Doctor MEAD's essay on this subject, yet the later improvements of others, deserved also their due consideration; and some successful cures incited me, not only to examine into the manner of their being performed, but also upon a clear conviction of the method being advantageous, I have ventured to state the facts and illustrate the discoveries of others, by bringing the account

P R E F A C E. ix

count of this so terrifying disease to the test of reason; for as CELSUS observes in his preface, the practice of medicine ought to be rational.

This essay in the introduction, endeavors to shew, that the small advances in the knowledge of this disease, and the uncertainty of it's cure are owing to common prejudices and vulgar errors, which have always proved of the greatest hinderance to the progress of every science, but particularly of the art and practice of medicine.—And also it points out the nature of this distemper incident to mankind, from the bite of a mad dog.

The first section treats of the bite of a mad dog, as the cause of the malady, examines into the properties of the *saliva* of those animals, and by what means it becomes hurtful and poisonous to other creatures. The progress of this poison is also traced, and it's various effects enquired into.



Doctor

DOCTOR MEAD's system, that the nervous fluid is chiefly affected in this disease, has been called in question, and the nerves themselves have been fixed upon as the seat of this distemper, and all the symptoms accounted for by the spasmodic contractions of the nerves. I have industriously avoided all unprofitable controversies, which in the art of medicine, as in all other arts and sciences, tend more to divide than to reconcile and convince the disputants. It probably may be in this case, as in many others, that by yielding and making some allowances on each side, truth would be easier ascertained than by cavilling through motives of pride and obstinacy. The wise father of physic has told us*, *That our art is extensive, and our life but short.* Why should we then waste in trifling and needless altercations the little time we have to run over the vast field of medicine?

* HIPPOCRATIS Aphorism i.

Men of the greatest abilities and acknowledged understandings have acquiesced in the persuasion of a nervous fluid, and of it's being not only the agent of the soul, but also that it is liable to be destroyed or propagated. Those who deny it's existence, do not refuse to acknowledge that the nerves are composed of a prolongation of the *meninges*, containing a pulposus portion of the brain, or *cerebellum*, *medulla oblongata*, or *medulla spinalis* in them, but will not allow that the nerves are vascular, and therefore solve all their actions by the vibrations, oscillations, and spasmodic contractions of the nerves. Allowing these external effects, which BAGLIVI, and the later accurate experiments of professors HALLER and WHYTT, and of Doctor BROCKLESBY, plainly evince of the irritability of the nervous parts, why may not the opinions of those learned professors and Doctors, SYDENHAM, BAGLIVI, BORELLUS, BÖERHAAVE, MEAD, HOFFMANN, LIEUTAUD,

TAUD, WHYTT, and HUXHAM in favor of a nervous fluid, or animal spirits be adopted? And at the same time that we find in those authors the proof of a *stimulus* in the blood, which acts on the nervous fibres of the blood-vessels, why may not the existence of a *sentient* voluntary principle be allowed of, which directs our will and motions at the same time that the component particles of the blood, particularly the salts, stimulate the vessels to such a degree, as to preserve the circulation of the streams of life? If it be urged that no one ever discovered either the nervous fluid or the vessels the animal spirits pass through, may it not be answered? That the OMNIPOTENT CREATOR has framed those tubes according to their use, and notwithstanding they may be too fine for our discovery even with the best microscopes, yet it may not be contrary to common reason, that they may be so formed as to convey proper subtile, elaborated particles

P R E F A C E. xiii

ticles from our blood, which may serve as the different links of the chain which connects our intellectual and corporeal faculties together; the existence of which rational soul intimately connected with our body, no one will presume to deny, although the means whereby they are united are effectually hidden from our limited view. How strenuously soever both sides may seem to insist on their different opinions, it is very evident that their pursuit in practice, are the same; both in food and medicine, time out of mind, such diet or physic has been given, which would promote the greatest separation of active particles to increase the spirits; and even those who stimulate the nerves, to produce their contractions, administer, and apply the same remedies to augment the circulation and heat, which is constantly lessened by perspiration. Since whatever be the singular notions of each side, they both follow the same intentions, there

there can neither be satisfaction nor utility in taking part in the dispute, but every one is to be left to enjoy his own opinion.

The second section enquires into the *hydrophobia*, and shews that this affrighting symptom is common to other diseases, although not so general or peculiar, as in this one, occasioned by the bite of a mad dog.

The third section examines the several methods of cure, whether rational or empirical. Among others, bathing in the sea, or in cold spring water, are severally treated of. I have freely given my opinion in relation to every external application, or internal medicine, used for the cure of this disease, and have endeavored particularly to shew that Doctor MEAD's powder, although far from being an infallible remedy, is neither useless, or void of merit. In the consideration of the different methods which are recommended, I have had constantly before me
the

P R E F A C E. xv

re example set to every physician by
 rofessor BOERHAAVE and Doctor
 MEAD. It is well known by many,
 nd recorded by Doctor MATY, who
 was intimately acquainted with both,
 hat those learned men were not al-
 ways of the same opinion, and yet their
 mulation towards the improvement of
 heir profession was so disinterested and
 void of jealousy, that they retained for
 ach other the highest sense of esteem
 nd friendship; never were displeased
 with each other when they differed in
 opinion, but mutually and reciprocally
 communicated their observations and
 designs, and were constantly present-
 ing one another with tokens of their
 regard. This humane and benevolent
 turn of mind in them both, appears in
 Doctor MATY's characters of those two
 great men *. And he instances, that

* *Essai sur le caractère du Grand Medecin, ou
 éloge critique de Mr. BOERHAAVE.*
Journal Britannique, tom. xiv. Ann. 1754,
mois de Juillet & Aout article 1er. p. 229, 230.
Eloge du Docteur RICHARD MEAD.

the

the BRITISH physician looked upon professor BOERHAAVE'S notions as chimerical, when he sought to cure the small pox without suppuration, by means of a specific medicine extracted from *antimony* and *mercury* †. And the LEYDEN professor was persuaded that the *ash colored ground liverwort* was by far, too highly extolled by Doctor MEAD for the cure of the *hydrophobia*. These opposite sentiments were candidly and amicably considered, and did not in the least decrease the high opinion and confidence they had for each other. In imitation of such venerable patterns, I have carefully expressed my thoughts as fully and clearly as I could, without giving offence, or lessening in the least that respectful tribute due to every person who exerts his abilities for the common good of mankind.—In this section the external and internal use of *mercury*, for

* BOERHAAVE de materie medica, sect. 1392, p. 256.

P R E F A C E. xvii

the prevention and cure of this disease
are particularly considered.

The fourth section contains cases and
observations tending to illustrate and
confirm by facts, the success of the me-
thod which was pursued. Although the
number be but small, there being only se-
ven, yet from these may be drawn suffi-
cient confirmation of the variety of the
distemper, according to the sex, con-
stitution of the patient, and season of
the year. The first two cases are plainly
acute. The three following are doubt-
ful. The sixth of the putrid kind.
and the seventh slow. Of these I am
under the highest obligations to Doctor
WHELE of SALISBURY, and to my very
worthy friend CHARLES ALLIX, Esq;
for their kind communications. And
as in an enquiry of this nature, even
a few well attested facts serve greatly
to ascertain the truth of an efficacious
practice, so trials made by different
persons; and such who are not of the
profession, will corroborate a testimo-
ny,

xviii P R E F A C E.

ny, and satisfy those who may have but an unfavorable opinion of medicine and physicians.

To every case I have subjoined my remarks, and I flatter myself, that the freedom I have taken will not be disagreeable to the authors of them, especially to Doctor NUGENT, whose ingenious Essay on the *hydrophobia*, and remarkable case of ELIZABETH BRYANT, I could not pass over without paying it due regard.

It may be observed, that in my remarks upon the case of FRANCIS RAY, I have taken no notice of Doctor JAMES's fever powder given by Mr. ALLIX, and lest I should appear to be biased or prejudiced, I think it but fair to declare, that I am fully convinced Mr. ALLIX gave it to FRANCIS RAY with no other intention, than to quicken the operation of the sea water which he sent, and whose purgative quality he feared might be lessened considerably by being stale. Doctor JAMES seems in the

P R E F A C E. xix

case of WILLIAM GOODACRE *, to attribute the cure of that person in the *hydrophobia*, to have been owing to his powder; but it doth not appear that this man had been bitten by a mad dog, and most probably the symptoms of the *hydrophobia* in the small-pox, were no other than what are observed in acute fevers, especially of a putrid nature, where the nerves of the *œsophagus* are particularly affected. I do not pretend to know, nor will I allow myself the liberty of guessing at the contents of that fever powder, which I own I never saw. From the effects which I have seen, it is a medicine of a powerful nature; it may undoubtedly have been of service in the beginning of fevers, in dislodging the putrid *ſaburra* from the first passages where it lodged, and caused the flame, but this I can safely add, from my own observation, that the purging, vomiting, and profuse sweats which attend it's operation,

* JAMES's Dissertation on fevers, p. 50.

cannot be safe in such a relaxed, low, and depressed state, wherein the *vis vitæ* is almost exhausted. In the recital of so many cases to recommend the sale of this powder, it were to be wished that in justice to mankind those also had been inserted wherein it had failed, as so many cautions to avoid the improper administration of it. A physician who has the welfare of his patient and reputation at heart, can never direct a medicine whose composition and ingredients he is a stranger to, let his desire of relieving his patient in the speediest manner be ever so laudable and just. And on the other hand, such physicians are rather to be commended than blamed for their tenderness and humanity, when after declining to prescribe this powder, they have generously attended their patients, to watch and guard them against the violent effects of so active a medicine which they have taken of their own accord, or by the persuasion of their zealous friends.

After

P R E F A C E. xxi

After all, Doctor JAMES who has also inserted WILLIAM GOODACRE'S case in his *treatise on canine madness*; p. 7, 8. "owns that he could not discover
 " the man had been bitten by a mad
 " animal to occasion the *hydrophobia*,
 " nor does he know in that case that
 " his powders would have cured him."

Lastly, in the conclusion, after enquiring into the cause of the general alarm, spread over the metropolis on account of mad dogs, some directions are given for the treatment of the disease, occasioned by the bite of a mad dog.

This is the substance of the Essay, now offered to the public, and which should have been publish'd some months ago, when it was drawn up, had not the advertizing of Doctor JAMES'S *treatise on the canine madness* retarded it's appearance, but on perusing that work and finding nothing to prevent this publication, I venture to submit my thoughts on the same subject, to the
 examina-

xxii P R E F A C E.

examination of every candid reader, whom I would first apprize, that I claim so little merit in this performance as truly to be able to say with the poet,

Vix ea nostra voco.

for I have only illustrated and attempted to reconcile the various opinions of others, and to fix upon the most rational method of cure from a full conviction, that such cure is in reality a practicable thing.

Let the reader then judge candidly of this performance, which if it prove the means of lessening the general and too strong rivetted apprehensions of the disease, and also contributes to the prevention or cure of it, I shall think I have not mis-spent my time, nor forfeited the good will and favor of my countrymen.

T H E

THE
CONTENTS.

The Introduction, Page 1

SECTION I.

Of the bite of a mad dog, 7

SECTION II.

Of the hydrophobia, 32

SECTION III.

Of the different methods of cure, 49

SECTION IV.

Observations, 90

Conclusion, 120

INTRO-



INTRODUCTION.

SIR THOMAS BROWNE †, in his enquiries into vulgar and common errors, among other causes of deception, places credulity, authority, and adherence to antiquity; and no doubt, as he observes, through the natural infirmity of human nature, through a supineness and readiness to believe whatever is transmitted, by a tradition seemingly authentic, and distinguished with authority, men are led implicitly to adopt the opinions of their forefathers, to propagate them with the same confidence as if they had been eye-witnesses of what they assert, and thus hand down to posterity the errors they early imbibed, and never gave themselves the trouble of inquiring into. But although mankind is not quite free from those prejudices, which are so many obstructions to the advancement of every art and science, yet daily experience testifies, that in an enlightened age popular notions are not so universally adhered

† SIR THOMAS BROWNE'S *Enquiries into received tenets, and presumed truths*, book i. chap. iv, v, vi, vii.

2 INTRODUCTION.

to, unless they be established by repeated experiments, and matter of fact.

Indeed now-a-days, some men run into another extreme, and from a predominant principle of vanity, reject, as so many idle tales, or false conjectures, every thing, which doth not immediately strike them, not only withholding their assent, but even refusing to examine, into the truth of whatever is proposed to their consideration. Thus it is hard to say, which of the two, credulity, or scepticism, has proved the greater obstacle to the improvement of natural knowledge. It is plain, that both have ended in a strong spirit of enthusiasm, and that, in the art of medicine, as in other liberal arts, men through credulity, authority, adherence to antiquity, and also through scepticism, have been strangely misled. But the true Philosopher steers a middle course, and avoids both those extremes; he respects the authority of the ancients, without yielding his assent to what is either unnatural, or improbable; nor does he hastily condemn them, in favor of new discoveries, unless these are confirmed by repeated experience. On the other hand, he does not reject whatever is offered contrary to ancient authority, but candidly examines, what is proposed on both sides, and agrees to every new improvement, which bears the test of repeated examination.

Had not this been the rule which several great men have observed, the art of medicine
4 would,

INTRODUCTION. 3

would, at this time, have been as much a conjectural art, as in the time of CELSUS*. Its certainty, indeed, can never be expected to be absolute, while there are, and must necessarily be, such a variety of constitutions, and of course such different degrees, as well as species, of the same distemper.

It is therefore the Physician's province, to discover the nature of the disease, the variety of its degrees, and appearance in different constitutions and climates, and to regulate his practice accordingly.

But to this great end, he must previously be acquainted with the construction of the human body, and the laws of the animal œconomy. It will not be sufficient alone to know the texture of the solids, without examining also the fluids. The knowledge of the circulation of the blood, which discovery will ever be the greatest honor to our countryman Doctor HARVEY, can avail but little, if the constituent parts of the blood are not examined, and, in the course of its circulation, the several secretions are not traced, the recrements and excrements observed, that by these inquiries the constitution and strength of every person may be determined.

Thus, by joining to what the ancients have remarked on these subjects, the improvements that have arisen from later experiments, the

* CELSUS De Medicina, in præfatione, p. 13—57.

4 INTRODUCTION.

great advantages proceeding from both will be happily united. The art of medicine will then appear, as Dr. BARKER says †, to have a settled rule of practice; and allowing for the difference of climate and constitution, the precepts of the *ancients*, and directions of the *moderns*, will be easily reconciled, according to their several notions of those diseases which repeated experience had made familiar.

Whenever any acute disease hath alarmed mankind, by its rapid progress, or baneful destruction, so as to have produced the greatest fears on its appearance, and despondency on its first effects, men have embraced, with the utmost eagerness, whatever method of relief has been offered, in the hope of receiving a speedy and instantaneous cure. This is remarkably the case with respect to that distemper, in particular, which is intended to be the subject of the following Essay.

There is not a more dreadful disease incident to human nature than that which we are liable to from the bite of a mad dog. The symptoms of it are terrible, the consequences are generally fatal, and the cure hitherto uncertain. The reflection on such an unhappy situation, which instantly occurs to a person bitten, disposes him to hearken, with implicit submission, to the opinion and advice of every one in whom he has the least confidence:
the

† BARKER'S Essay on the agreement between ancient and modern physicians, chap. i.

INTRODUCTION. 5

the * boasted remedies of the ancients, or empirical jumbles of later times, are applied in vain, the poison gains ground, and the patient, seeing himself disappointed, begins to doubt of the possibility of his being saved, and adds to the fury of the disease by his despondency and despair; till at last the aggravated symptoms relieve him from misery, by a welcome death, or which was the custom, not a century past, the unfortunate person was, contrary to all rules of humanity, deprived of life, by being smothered between two feather-beds †.

To prevent, therefore, all ill consequences arising from vulgar and common errors, the nature and effects of this poison, on the animal œconomy, the different methods of cure recommended in all times, and the few cures performed, are candidly to be examined, and mankind freed, if possible, from that most terrible reflection, that providence should have permitted the whole animal creation to be liable to so dreadful a disease, without pointing out, also, the means of cure.

That this distemper is not absolutely incurable, many instances plainly prove; and professor BOERHAAVE is of opinion, “ That from the examples already settled, and confirmed in the cases of other poisons, we

* BOERHAAVII Aphorismi, 1139, 1141.

† MEAD's Essays on poisons, p. 176.

6 INTRODUCTION.

“ought not to despair of finding out the proper antidote for this also *.”

In the course of this Essay I shall endeavor to prove, that this disease is of a complicated kind, having different appearances according to the age, strength, constitution, sex, and manner of life of the person bitten, temperature of the climate he inhabits, and the season of the year in which the accident happens; and also, that as circumstances of this sort are found to vary in particular cases, the method of treatment is to be varied likewise.

* Nec desperandum tamen, ob exempla, jam in aliis venenis constantia, de inveniendō hujus singularis veneni antidoto singulari. BOERHAAVII Aphorismus, 1146. VAN SWIETEN Commentar. in BOERHAAVII Aphorismos, tom. iii. p. 579.

SECTION

SECTION I.

Of the Bite of a Mad Dog.

BEfore I proceed to give an account of the symptoms occasioned by the bite of a mad dog, it may not be improper to observe,

First, That wounds made by the bite of a person, in the height of anger, of enraged animals, or wild beasts, are always attended with severe accidents: these are owing, as CELSUS declares *, very properly, not to any particular poison in the animal, but to the violent laceration and compression of the muscles, nerves, tendons, vessels, ligaments, and bones; particularly in the bite of a large dog, of an horse, a wolf, a bear, or any such sized creature whose tusks and teeth either squeeze and bruise the parts they lay hold of, with so much force, as to make a deep wound, or tear away with exquisite pain, whenever their teeth have not entered so deeply. The symptoms arising from these bites, are, to the full, as violent as those which attend lacerated wounds

* CELSUS, lib. v. cap. 27.

HEISTERI Chirurgia, part. i. lib. i. cap. xvi. p. 160.

occasioned by any blunt-pointed or rough instrument whatever; the loss of substance, and the parts affected, determining the violence of the symptoms, and the length of time requisite for obtaining a cure; according to the degree of suppuration, and constitution of the patient.

Secondly, Such is the fermentation raised in the blood, by the passion of anger, that the momentum of the circulation is greatly increased, and the secretion of the *saliva* forced out, in a larger quantity, by the frequent pulsation and compression of the blood-vessels. Such persons, or creatures, who are less liable to sweat, have generally a more copious discharge of urine; but in a violent fit of anger, the urinary secretion is suspended, and they throw out large quantities of *saliva*, which appears the more frothy, the more the person or animal is enraged, according to the velocity of the circulation of the blood, which is sometimes increased to such a degree, as to produce an high fever, attended with *delirium* and convulsions, and which, in some instances, brings on an apoplexy, and death.

Thirdly, That the *saliva* of a man, an horse, a monkey, and even of a dog, is not poisonous in a sound state, nor even when they are provoked to anger, common experience daily proves. The *saliva* is a thin, transparent humor, which, heated on the fire, doth not thicken, is free from taste or smell,
froths

froths when strongly shaken, and is a glandular juice separated from pure arterial blood, and consisting of water, spirit, oil, and some salt*. Now I shall only ask, Whether it is not universally admitted, that medicinally the *saliva*, both of man and animals, have been recommended externally as detergents, and dryers? Is it not known that many persons have found benefit from training up young dogs daily to lick foul ulcers, which no ointment could cleanse so well? And LORD BACON † has long since taken notice of it as a common observation, That dogs are almost the only beasts which delight in fetid odors; whence their readiness to lick their own, and other sores, may be accounted for: and there never was known a single instance in which the *saliva* of a young dog, although it has effectually acted as the most powerful detergent on ulcers, and has been received on those ulcers, when bleeding, hath produced the least signs of madness, or *hydrophobia*,—merely because the dog was in a sound state.

No other symptoms, therefore, will arise after the bite of an angered person, or an enraged animal, such as an horse, a monkey, or a dog, than will appear from a lacerated and contused wound violently compressed and torn.

* BOERHAVII Institutiones Medicæ, v. 66.

† BACON'S Sylva Sylvarum, cent. ix. v. 835. Epistle on fetid and fragrant odors.

I come now to consider what may be the cause of madness in dogs and other animals, and to describe the symptoms which attend the bite of those animals when mad.

PALMARIUS*, a disciple of FERNELIUS, who gives a circumstantial account of this madness, describes it to be a rage which seizes dogs at any time of the year, but chiefly during that part of the summer called the dog-days; that they communicate this madness by contact, both to man and beast. Whenever a dog, an animal easily provoked to anger, of a natural propensity to become furious, is kept from drink, either during the excessive heat of the summer, or the sharp cold in the winter†, his bile acquires such an extraordinary degree of acrimony, that he grows mad: but if these contrary dispositions of the atmosphere affect his blood and humours in such a manner that he become furious, it often also happens, that, through long fasting, being filled with salt meats or salt drink, or through want of drink after long and laborious exercise, a dog runs mad: and, particularly, if a dog has been bitten by one mad; or hath eaten of the flesh of any animal dead of madness, or of the plague, or of any putrid disease, killed by lightning, or by poison,

* JULIUS PALMARIUS Constantius De morbis contagiosis.

† DIOSCORIDES De Theriaca, cap. i. Signa rabiosi canis, eorumque qui ab eo demorssi fuerunt.

of a Mad Dog.

71

or hath drank of stinking and corrupted waters, or eaten of high-seasoned acrid food, or hath worms;—in any one of these cases he is liable to go mad. Therefore in such countries where the change of air is sudden or extreme, sometimes violently hot, at other times intensely cold, this disease, in proportion, is more common ||.

An instance of the sudden effect of cold on a dog, I shall here relate. In the month of *February* 1744, on a clear frosty morning, a person of my acquaintance going from his house in *Dean-street*, near *Soho-Square*, to *Mary la bonne*, took out with him a small dog, of a spurious breed, partly spaniel, and partly harlequin, which had been kept within doors all the preceding part of the winter. The little creature was much delighted with his liberty, and running to and fro, when near *Cavendish-Square*, his master saw him reel, and stagger; upon which, he took the dog up into his arms, and was rubbing his legs, on the side he thought was benumbed with the cold, when, on a sudden, the dog was observed to froth considerably at the mouth, his eyes were red like fire, and immediately, from being a timorous and fond animal, he began to snap at his master, and attempted, several times, to bite him.—On

! BOERHAAVI Aphorismus, 1134. VAN SWIETEN
Comment. tom. iii. p. 539. MEAD's Essays on poisons,
p. 137.

this,

this, convinced of the danger he was in, the gentleman threw him out of his arms, and the dog ran swiftly down the next street, where he was pursued into a meuse. He then endeavored to bite a large dog, which avoided him, and afterwards ran at some coach-horses which the farrier was shoeing; but upon his master's calling out to the man, the dog was prevented from doing any mischief, by a fortunate stroke of the farrier's hammer, which at once put the poor animal also out of pain.

Such is the pernicious virulence of the *saliva* thrown out by a mad dog, that all kinds of animals whatsoever, such as monkeys, swine, cats, oxen, horses, sheep, mules, foxes, wolves, and others, are not only liable to grow mad, upon being bitten; but also have, without any bite, been seized with the *hydrophobia* upon the sole contact and admission of a mad dog's *saliva*. And PALMARIUS † relates an instance of a countryman, who raving mad of this disease, and being informed he had not long to live, desired, in an intermission of his fits, that he might take his last farewell of his children, which the people who kept him tied down having consented to, he kissed them, and then was suffocated. However, on the seventh day the children were seized with the same illness, and died in the same cruel agonies and pains. He also

† PALMARIUS loc. cit.

has seen cattle killed by eating straw on which the flabber of mad animals had been left.

* COELIUS AURELIANUS records a quicker progress of the infected *saliva*. He says, that a certain botcher-woman having taken a coat to mend, which had been torn by a mad dog, having drawn the threads through her lips to make them stick together, and having moistened the seams with her tongue, that her needle might pass through the easier, ran mad the third day.

Notwithstanding GALEN asserts ||, that dogs are the only animals which become mad without being bitten, or the least communication; many of the abovementioned creatures grow furious without any previous infection, but none so frequently as dogs, foxes, and wolves †. PALMARIUS ‡ has seen twenty wolves, driven mad through hunger, sally out of a forest, and seize every living creature that came in their way, none of which escaped who were bitten.

* Sartrix etiam quædam quum chlamydem scissam rabidis moribus, farciendam sumeret, atque ore stamina componeret, & lingua pannorum futuras lamberet, assuendo quo transitum acus faceret faciliorem, tertia die in *rabiem* venisse memoratur. COELIUS AURELIANUS De morbis acutis, lib. iii. cap. ix.

|| GALENUS, lib. vi. De loc. affect.

† BOERHAVII Aphorismi, 1132, 1133.

‡ PALMARIUS, loc. cit.

Doctor LISTER*, and Doctor MEAD†, assign the true cause of the violent fermentation, raised in the blood of dogs either through heat or cold, by observing, " That no dog
 " ever sweats; and that as next to the miliary
 " glands in the human body, the salival glands
 " are the most constant and easy emuncto-
 " ries, through which the saline and active
 " particles of the blood are discharged, more
 " spittle is separated in a dog, when mad,
 " than at any other time, and that very
 " frothy, or impregnated with hot subtil
 " parts."

Now whenever this discharge is obstructed, by too great a viscosity of the blood, from an increased circulation and want of dilution, the consequence of long thirst; then the saline particles grow more acrid, and the absorbed bilious salts particularly acquire such acrimony, as to produce a high fever and *delirium*, by irritating the nerves, disturbing the secretion and course of the nervous fluid, and throwing all the laws of the animal œconomy into confusion, exciting such different and various symptoms, in persons of different sexes, and constitutions, according as Doctor MEAD rightly says, to the passions of the mind they are most inclined to. And in this morbid state of a dog's *saliva* the symptoms will be

* LISTER, Exercitatio iii*, p. 133.

† MEAD, Essay on poisons, p. 138.

re aggravated, than those which attend the
of an angered animal that is sound; and
patient will be in greater danger. Or
never the blood and juices of a dog, cat,
f, or fox, shall be so vitiated as to become
id, by either of the causes already recited,
a will a person, bitten by such animal, be
osed to all the fatal accidents which the
ission of such a putrid, high fermenting
us must naturally produce, by mixing with
blood and humors, particularly the nerv-
fluid, which is remarkably affected in pu-
diseases of all kinds, but especially in pe-
ntial and bilious fevers, wherein the acri-
nious salts of the putrid bile absorbed into
blood, and also the dissolved state of the
od, which soon follows, vitiate the nervous
d, at the same time that the coats of the
ves are both irritated and relaxed. Hence
se irregular spasms, and involuntary con-
tions, all over the body, which bring on a
sion, stronger convulsions, and at length,
drying up the nerves, and destroying the
d commonly called the animal spirits, put
end to the motion of the necessary springs
life.

This disease, therefore, is of a different na-
e, and even more or less complicated, ac-
ding to the season of the year, and to the
e of the juices belonging to the mad ani-
l, whether sound or morbid. Obstruction
perspiration will, in winter, produce fever,

deli-

delirium and phrenzy, or madness; long fasting, thirst, after violent exercise, salted, spiced, and all acrid meats: likewise * worms bred in the stomach, intestines, and at the root of the nose, will have the same bad effects of producing madness, and the active particles of the dog, cat, wolf, or fox's *saliva*, rendered more subtil by the increased momentum of the blood, will be capable of infecting man or any animal that they shall bite with the same fermentating principles, and of bringing on the same fatal symptoms.

In summer, the humors of the body affected by tainted air, food, or by stagnating and corrupted waters filled with innumerable insects, both living and dead, are subject to a putridity, which is afterwards increased by the velocity of the blood rarefied particularly in the summer, and even in autumn, through the heat of the season. In man, this produces an

* Some authors have been fond of the notion, that not only the *hydrophobia*, but the small-pox, the *Lues Venerea* all cutaneous eruptions, and many other disorders are produced by worms, generated in the several humours of the body. That worms are admitted and multiplied in the first passages, and under the integuments both of man and beast, and occasion various complaints, common experience daily shows. But as professor ASTRUC has refuted, the existence of worms in venereal cases, I shall refer the reader to his opinion †, which will hold good in the examination of the vitiated *saliva* of a mad dog, in which no one as yet proved the appearance of any such vermin.

† ASTRUC de morbis venereis, tom. i. lib. ii. c. ii. p. 127, & seq. tom. ii. p. 1067.

acute

acute, or a bilious fever, which deprives the solids of their contractile force, destroys the animal spirits, inflames the membranes of the brain, brings on a *delirium*; and either kills the person by convulsions, or by changing the whole mass of blood into *pus*, exposes the patient either to critical tumors, discharges of matter, a *marasmus*, or to some chronical disease, unless timely prevented. In the brute creation, the progress would be the same, were they not destroyed as soon as the fever appears, especially if attended with a phrenzy; for no sooner doth the *delirium* seize them, than that fatal effect of their biting comes on, and the blood then being in its highest degree of fermentation, has the more power to infect other bodies, and raise the same furious symptoms in them.

It appears therefore, that in different seasons of the year, there is a latent disposition in the fluids of dogs towards acrimony and putridity, which according to the various effects of those seasons manifests itself; and from an innocent secretion, turns the *saliva* of a dog to a most dangerous poison.

Here it may not be improper to describe the signs of the several degrees of madness in dogs*.
The

* In SIR THEODORE MAYERN's account, published from his papers, by SIR THEODORE DE VAUX, there are reckoned up no less than seven distinct sorts of madness or diseases, peculiar to dogs.

1. The *hot madness*. 2. The
C running

The madness, which through cold, seizes these animals like a phrenzy in winter, comes on so suddenly, as to afford no time for observation or caution, and many instances might be produced of house-dogs or others, biting their masters and keepers, without the least previous notice; and of the same furious effects being raised in the person bitten, by means of the acrimonious salts contained in the blood of the animal, and now let loose and discharged in its *saliva*.

In all seasons of the year, but particularly in summer and autumn, the madness arising from a putrid state of the blood doth not come on so suddenly: there are manifest signs of the animal being ill; the progress of the disease is gradual; and either quicker or slower, according to the elasticity and resistance of the solids, and the degree of putrescence, and acrimony of the salts circulating in the fluids.

The signs of a dog going to run mad, are these. He is first seized with a shaking and trembling, then grows thin, seems dejected, hides himself, refuses to eat or drink, hangs down his ears and tail, sneaks away growling, howls at times in a particular manner, flies

running madness. 3. *La rage muet*, or the *fullen madness.* 4. *The falling madness*, or *epilepsy.* 5. *The blasting or withering.* 6. *The sleepy madness* owing to worms. 7. *The rheumatic disease.* Of these he says, the two first are to be caught by the breath of dogs, and are incurable; the five last contagious, but curable. *Philosophical Transactions*, N°. 191.

upon

upon strangers, and carries his head as if he were sleepy. His eyes are watery, his nostrils drawn close, and discharging *mucus*, his mouth open, and running with his tongue dry, and of a bilious color.

In the second degree of madness, which is by far the most dangerous; a dog forgets his master, lays hold without distinction, of every person or animal who comes in his way, and without barking, bites and tears whatever he seizes. He now cannot swallow, and turns away at the sight of water. He opens his mouth wide, pants for breath, froths considerably, hangs his tongue quite out, which now turns of a livid color. His eyes are inflamed, and of a fiery red. He at times runs on furiously, at other times stands or lies down as if stupid, or half asleep; particularly during the remission of the fever, which constantly attends these symptoms, and whose paroxysms, and exacerbations are regular*. In this condition, all other dogs shun him, and if they cannot well avoid him, they yield, and endeavor to soothe him.

There are several methods recommended by PALMARIUS and others, to discover whether a dog is mad that has bit a person, and has either made his escape, or been killed before the signs of madness could be observed. First, to apply a pultice of bruised walnuts to the

* PALMARIUS loc. cit.

wound, and let it lie on the whole night, and then give it to chicken for food, and if the dog which has escaped is mad, the chicken will die in a day or two. Secondly, to sop up the blood running from the wound with a piece of crumb of bread, and offer it to dogs to eat, which they will refuse, if the dog was mad; or to feed fowls with the same sop, which will kill them in twenty-four hours, if the dog was in that dangerous state. Another method advised, where the dog has been killed, is to rub his mouth, jaws and nose with a piece of bread, so as to moisten it with the *saliva*, and in the same manner offer it to dogs, or to feed fowls with the same intention.

Some persons affirm, that such dogs as have been wormed, never bite others, although they run mad either spontaneously, or after being bitten by a mad dog, but no reliance is to be made upon such an assurance; since it is plain, that the danger of being infected is entirely owing to the admission of the *saliva*, which may have the same bad effect, being licked up by other dogs, or received into any wound; although perhaps the *virus* may not be so speedy in its progress, as when immediately conveyed by the bite of the infected animal. The extraction therefore of part of the *frænum* of the tongue, can be of no real use to prevent this calamity.

It is to be observed, that the *saliva* of a mad dog, cat, or other animal has no bad effect on the skin, any more than the venereal,

the

the

the leprous, or any other *virus* *, provided the skin be whole, and that the part on which the *saliva* has fixed be immediately cleansed and well washed †.

But whenever the *saliva* of a mad dog is received into a wound, it takes the same course as the variolous matter, or the venereal taint; indeed in general, it is quicker in its progress, unless in some particular constitutions, wherein it has been known to lie dormant months and years ||. But the *saliva* of a viper, a rattlesnake, or a *tarantula* is quickest of all in its effects, which however vary, as to the time of their appearance in different constitutions; and as REDI remarks, the *saliva* of the viper frequently produces the most cruel and violent symptoms, bringing the creature bitten to the very brink of death, and yet the animal is not destroyed, but is cured without help or medicine, and by the sole power of nature ‡.

Children and young people are affected in a stronger manner, and sooner than persons more advanced in years §; owing no doubt to the different degree of velocity in the circulation of their blood. But no caution is

* STALPART VANDER WIELEN, *Observat. rarior centur.* i. p. 413.

† DU CHOISEL's method of treating persons bit by mad animals, p. 20.

|| FREIND, *Historia Medicinæ*, 4to, p. 208. MEAD's *Essays on poisons*.

‡ REDI *Experimenta Naturalia*, p. 262.

§ DU CHOISEL's method, p. 18.

to be omitted, for although Mons. SAUVAGES * says, that men are more liable to the most violent effects of this poisonous *saliva* than women; yet BARON VAN SWIETEN † observes thereupon, that men, by sweating through hard labor, may have discharged the venomous *virus*, while a person of a more tender, delicate, and cooler constitution, may feel the effects later, and die with more ease. An instance which I saw, will also comparatively shew the various effects of the *saliva* of a mad dog, on different species and constitutions of the same animal.

In June 1758, a mad dog ran into the courtyard belonging to the Rev. Doctor FAVELL, of *Witton*, in the county of *Huntingdon*: He bit a pointer in the heels, fought and tore two spaniel bitches, who then were suckling their puppies, a spaniel dog, and a greyhound bitch; after which he ran into the town, bit other dogs and a child. Three days after, near the full moon, the two bitches sickned, their milk dried up, they had not the *hydrophobia*, but died, as it were suffocated on the fifth day, without violent signs of madness, or any power of running or biting; but delirious and constantly barking and howling in a particular hoarse manner. On the seventh, the pointer grew dull, then furious, and was shot. The greyhound continued well, till the next full

* SAUVAGES dissertation sur la nature, & cause de la rage, p. 7, Ann. 1748.

† VAN SWIETEN Comment. tom. iii. p. 549.

moon,

moon, when she became moping, avoided company, and snarled at those she was generally fond of; upon which the symptoms increasing, she was strangled. The other dogs bitten in the town as well as the child, were in no sort affected. This verifies the opinions of all authors who have written on this subject, that the same vitiated *saliva* may have various effects according to the different constitutions of the animal or person bitten.

* The general opinion of the most celebrated authors and practitioners, is, that the poisonous *saliva* of a mad dog insinuates itself into the wound made by the bite †, from whence it is absorbed in like manner with the variolous matter in the practice of inoculation, or like the venereal *virus*, and circulates with the blood; which by degrees it taints and affects the several humors, as also the nervous fluid, called the animal spirits; and by stimulating, causes frequent spasmodic contractions of the nerves,

Some account for the different progress of this *saliva* in like manner with the venereal *virus*, which according to professor BOERHAAVE and others, being lodged in the *cellular membrane* and there sheathing itself in the oily

* PALMARIUS, De morfu canis rabidi, chap. i.

BOERHAAVII Prælectiones Academicæ, de morbis nervorum, tom. i. p. 214.

MEAD's Essays on poisons. Introduct. p. 30, & seq.

† SAUVAGES dissertation sur la rage, p. 45.

VAN SWIETEN Comment. tom. iii. p. 551.

substance contained in the cells of the *membrana adiposa* lays dormant therein, until it be absorbed by the *lymphatics* and conveyed into the blood vessels, wherein it circulates with the blood, and mixing with it sooner or later, unfolds its active principles according as they have been more or less sheathed. This makes no doubt, the wide difference between the slow advances of these acrimonious salts in persons of a lax or leucophlegmatic habit of body, or particularly when received into the fatty substance contained in the *cellular membrane*, and their quick progress when instilled directly into the blood, which can seldom happen without wounding at the same time the nerve which accompanies the blood-vessel; and thereby causing those spasmodic contractions and painful pulsations, which the known irritability of those parts will be liable to.

Others, however, will not allow that this poisonous *saliva* is conveyed by the blood, but account for all its effects from its *stimulus* on the nerves, which are thrown into spasms, convulsions, strictures, and involuntary contractions.

DOCTOR NUGENT adopts another system. He seems, in his ingenious essay, p. 133—139. to acquiesce in the existence of a nervous fluid, commonly called the animal spirits, but will not allow that they are tainted by the *saliva* of a mad dog, or that the several symptoms are produced by their means: nay, he doubts, p. 147. whether, “although undoubtedly

“ edly poisoned liquors get into the circulation, it is not probable that they carry none of their malignity with them, but leave it all among the fibres of the part they first infect.” And throughout the whole essay, he endeavors to account for all the symptoms arising from the bite of a mad dog, by the action of the *virus* on the nervous fibres, whose vibrations and oscillatory motions are first by the nibbling poison thrown into *spasmi*, which being repeated, are progressively continued from one nerve to another, till they are put into violent contractions and affect some or other of the *viscera*.

It is not my design, by any means, to enter into a fruitless controversy. The opinions of PALMARIUS, professor BOERHAAVE, and doctor MEAD, are sufficient authorities for me; and experience justifies their assertion, that the nervous fluid, whatever it may be, is generally tainted in the fever raised by the bite of a mad dog. It would be endless to quote all they have said; I shall therefore only refer the reader to professor BOERHAAVE's, and doctor MEAD's thoughts, concerning the nervous fluid or animal spirits*. And with regard to the effects of the bite of a viper, or the puncture of a nerve or tendon, they may vary greatly

* BOERHAAVI Aphorismi & prælectiones academicæ de morbis nervorum.

MEAD, Essay on poisons, loc. cit.

in their consequences *; as possibly the first may be destitute of putridity, and yet have a sufficient acrimony to throw the whole nervous system into the same fatal convulsions as the puncture of a considerable nerve, or tendon commonly doth. But putrid diseases in general, and particularly those of the most active kind, as the plague, the small-pox, and *Lues Venerea*, are known to diffuse themselves all over the human body, and to affect distinct excretories according to the different shape, figure and size of their acrimonious salts. Thus the pestilential matter affects the larger glands, as the *parotid*, the *axillary*, and *inguinal*; the small-pox, those of the skin; and the *Lues Venerea*, the testicles, the *inguinal*, and *salival* glands.

The putrid *saliva* of a mad dog has been compared long ago to the venereal *virus*, in its manner of being communicated and in its progress, by ALEXANDER MASSARIAS †, professor of PADUA, as professor ASTRUC records.

The more the salts in these putrid diseases are exalted and volatilized, the more violent is their effect on the nervous system, and the sooner is the nervous fluid tainted.

But to proceed to the symptoms incident upon the bite of a mad dog. I have already

* Venenum pestilens, variolosum, rabiosum, alio modo communicatur, quam viperinum. BOERHAAVI prælectiones academicæ de morbis nervorum, p. 214.

† ASTRUC de morbis venereis, p. 842.

mentioned, that the pain and cure of the wound depended on the texture of the parts bitten; the same may be said of the bite of a mad animal as of an angered one; for the bites of mad dogs have been commonly found to heal without difficulty; indeed in some habits of body they scab over, and do not heal so firmly.

The first effects of a poisonous *saliva*, appear rarely before the third day; sometimes not till the thirtieth or fortieth, and some instances are related of the poison laying dormant two or three years; nay longer, and then breaking out*. It generally shows itself at the full, or new moon†, when a sharp pricking pain is felt in the part where the bite was given, although the wound shall have been healed some time. Unless some nervous or tendinous part be bitten, the pain at first is not very violent, it soon however ascends, and spreads itself all over the muscles of that limb, causing a weariness; then darts up towards the throat and heart, and occasions a weight on the *præcordia*, and a great oppression, a continual inquietude attended with sighings and sobbings, a dullness and love of solitude. The person's mind begins now to be affected, he grows peevish and angry, and in his sleep he is disturbed, restless, and frequently awakened by frightful dreams. In the second stage of this disease

* ETMULLERI opera, tom. i. p. 504.

† MEAD's Essay on poisons, p. 152, 153.

all the above symptoms increase ; then come on flushing heats, a burning heat at the pit of the stomach, *nausea*, vomiting of dark and viscid matter, particularly a deep colored and porraceous bile ; a fever attended with horrors, tremblings, *subfultus tendinum*, and convulsions. A great thirst, dryness of the throat, hoarseness, difficulty of swallowing liquids, but a possibility of admitting solids, a copious discharge of the *saliva* like froth, which the patient avoids swallowing *, a costiveness, priapisms, or *furor uterinus* and *delirium*.

In the last stage, the patient is in the greatest fury ; his madness increases with every exacerbation, and the remissions are attended with a cold sweat, as the pulse and fever fail : yet in the whole course of his fury he continues in his senses, and is so far from being mischievous or attempting to bite, that he is afraid of doing harm, and cautions the bystanders, lest he should lose his senses and prove hurtful to them †.

His

* LISTER exercitationes medicinales, exercit. iii^a. p. 114—117.

† Authors do not entirely agree in this point ; but as the generality are of opinion, that the unhappy persons laboring under this disease are not mischievous even in very hot climates, I think proper to quote their several sentiments, that through fear of accidents such patients may not be deserted, want proper assistance, nor be put to a violent death, which is no less than murder, if the cruel custom of suffocating them should still prevail in any civilized country, and for which there can be no warrantable plea, since instances
are

His appearance now grows shocking to behold. His eyes are inflamed, staring, and wild; the tears flow involuntarily, his nostrils are spread, his mouth open, his tongue hanging out, rough and black; his voice extremely hoarse, his thirst intolerable, terrified at the sight of any liquid, particularly of water, and indeed of any shining or pellucid object; as any thing white, a looking-glass, &c. He froths at the mouth, endeavors to spit at the by-standers. Such is the sensibility of the nerves, that a glaring light, the least noise, or the smallest breeze of cool air, throws the patient into horrors, spasms, and convulsions. The last signs are, an extension and rigidity

are produced of persons being cured who had the *hydrophobia* strongly upon them.

Quibus addo, quod equidem neminem hactenus vel audiverim latrare vel viderim mordere. TULPII Observ. Medic. lib. i. cap. xx.

Doctor MEAD says, that sometimes in their rage and fury they attempt doing all possible mischief to their most beloved friends and relations, but most commonly are melancholy, resigning themselves to death. Essay on poisons, p. 133.

Doctor DESAULT declares, that of all the persons whom he has seen seized with this madness, and that have even died raving, not one ever attempted to bite; nor did any counterfeit the actions or noise of animals, which had bit them. Dissertation sur la Rage, p. 322.

Monsieur DU CHOISEL saw only one instance of a young man who bit two women in the height of the fury. Method. p. 21. May not the heat of the climate, and constitution of the Indian, have produced this unusual effect? However, it is best to be upon one's guard in such cases.

of all the nerves*, a total inability of swallowing liquids, a dread not only at the sight, but even at the mention of them, a *vertigo*, general convulsions, and death; which, from the time this fatal disease is manifest, happens mostly on the third day, although it seldom exceeds the fourth.

In such bodies as have been opened after this disease, it has appeared, that all the organs of deglutition are inflamed, that the stomach was filled with slimy and viscous matter, mixed with bile of a dark and porraceous color; that the gall-bladder was full of deep green-colored bile, the *pericardium* generally quite dry, the lungs greatly distended with blood, the heart, and also the arteries, full of a thin fluid blood, which doth not coagulate in the air; the veins empty, and all the membranes of the brain, *cerebellum*, *medulla spinalis*, and *viscera*, dry.

From the above-mentioned view of the bodies, and a consideration of the symptoms of this disease, doth it not appear, very plainly, that the putrid fermentative *saliva* of a mad dog circulates along with the blood†, acts as a powerful *stimulus* on the nerves and nervous coats of the arteries, renders the saline particles of the blood and humors more active and acrid, keeps the blood in a dissolved state,

* *Hydrophobia homini evenit cum distensione nervorum.*
LISTER Exercit. iii^a.

† MEAD's Essay on poisons, p. 140.

is discharged by the salival glands down the *œsophagus* into the stomach, causing, in its course, a dryness, tension, pain, and inflammation, and throwing all the nerves, by its irritation, into spasms and contractions, which produce the difficulty of breathing, and of swallowing liquids? That in a state of putridity the nervous power being destroyed, the heart and arteries can no longer contract, and therefore are found full of blood; and that the acrimony of the bile, being increased by long fasting, and want of dilution*, adds to the violent effects on the first passages, and helps also to affect the brain, and, consequently, the whole nervous system?

* Mr. HOLLWELL, in his Narrative of the deplorable death of the gentlemen suffocated at CALCUTTA, describes very strongly the terrible effects arising from the absorption of the bile into the blood; the circulation of which was raised by the tumultuous passions of the mind, rage and despair, and the bilious salts being highly volatilized for want of air to breathe, and of liquids to dilute during the profuse sweats of the confined persons, brought on a *delirium*, loss of strength, and, to such as survived, putrid fevers.

S E C T I O N II.

Of the Hydrophobia.

COELIUS AURELIANUS, a physician of the methodic sect, who lived, as Monsieur LE CLERC records * from REINESIUS, about the fifth century of the Christian æra, is the first author who has written largely of the *hydrophobia*, and described all the symptoms of it, with any tolerable exactness. In his time it was matter of great dispute among the physicians, whether the *hydrophobia* was known to the ancients, or was a new disease? The reasons alledged on both sides, may be seen at length in his treatise *De Morbis acutis* †. He is clear in his opinion in favor of the ancients; intimating, that although HIPPOCRATES does not particularly treat of this disease, yet he may be supposed to have alluded to it in the following sentences ||.

Οἱ φρενιτικοὶ βραχυπολαί, ψοφεῖ καὶ ἀπτόμενοι
τρομῶδες.

* LE CLERC Histoire de la Medecine, p. 556.

† COELIUS AURELIANUS, lib. iii. cap. xv.

|| HIPPOCRATES a FOESIO, lib. i. Prædict. p. 68. & coacorum prænotionum.

VAN SWIETEN Commentar. tom. iii. p. 536.

Phrenitici parùm bibunt, ex levibus strepitibus facile irritantur, ac percelluntur, tremuli sunt.

Οἱ φρενιτικοὶ βραχυπολαί, φοβεῖ καὶ ἀπληρομενοί, τρομώδεις, ἢ σπασμώδεις.

Phrenitici parùm bibunt, ex levibus strepitibus facile irritantur, tremuli sunt, aut convulsionibus tentantur.

Persons in a phrenzy drink very little, are disturbed and frightned, tremble on the least noise, or are seized with convulsions.

ARETÆUS*, in treating of the cure for phrenitics, mentions the very same.

† The methodics ranked all diseases under two classes; those which were caused by stricture, or tension, and those caused by relaxation. COELIUS AURELIANUS places the *hydrophobia* among the diseases caused by stricture, or tension; and says, “ That it is possible for the same passion to be produced in bodies, without any manifest cause, whenever a stricture is spontaneously occasioned, like that which ariseth from poison ||.”

* ARETÆUS De Morbis acutis, edit. BOERHAAVIUS, lib. i. p. 72. C. Ibid. p. 77. B.

† LE CLERC Histoire de la Medecine.

|| Est præterea possibile sine manifesta causa, hanc passionem corporibus innasce, cum talis fuerit strictio, sponte generata qualis a veneno. COELIUS AURELIANUS, lib. iii. cap. ix.

There is a great difference to be made between the difficulty of swallowing † which arises from a relaxation, and that which is known to attend the *hydrophobia*. In paralytic disorders frequently attending upon old age, and in some sorts of *angina*, neither solids nor liquids can be allowed to pass; and the very attempt has endangered the patient, who has been almost suffocated. But to this * difficulty of swallowing, in the *hydrophobia*, a real † dread of water succeeds; particularly in those constitutions, and in that advanced state of the disease, when the stricture or tension is so great, the acrimony so considerable, the inflammation so high, the fever so strong in its exacerbations, and the irregular spasms of the nerves so far increased from partial contractions to general convulsions, that the fear of suffocation is become continual; in which case also it appears plainly, that the patient's mind is as much affected as the body.

|| COELIUS AURELIANUS has written a whole chapter to prove, that the *hydrophobia* is

† Medical Essays, vol. i. art. xxvii. Dr. GILBERT WAUGH's account of HART's daughter.

* *Δυσκαλάρσις*.

† *Υδροφοβία*.

|| COELIUS AURELIANUS, lib. iv. cap. xiii.

All authors agree, that the whole body is affected, but more particularly the stomach and belly, and the head by consent. The *cardialgia*, *ingulvus*, and in some the retention of the excretions, plainly shew it.

Etiam

is a passion of the body, not of the mind. That it is the effect of the bite, cannot in the least be doubted; but, moreover, that the mind also partakes of this effect, is as undoubtedly true: and such is the alteration to be observed therein, that either dejection, melancholy, or furious madness, are the constant attendants of it; which shews, that the nerves and *sensorium commune* are strongly affected.

But the *hydrophobia* is not always a concomitant symptom, although the disease excited by the bite of a mad dog should end fatally. The pain, fever, *delirium*, and convulsions, have appeared successively, and destroyed the patient on the third day, without the least sign of the *hydrophobia*, as Doctor MEAD acquaints us*. And professor BOERHAAVE attributes
 “ the variety of appearance and effects of this
 “ contagious *saliva*, both with regard to the
 “ time it breaks out, and its various symp-
 “ toms, to the season of the year, the dif-
 “ ferent degree of the disease in the furious
 “ animal, the constitution of the person
 “ bitten, bilious habits being the most ea-
 “ sily affected, phlegmatic and dropical the
 “ least; and also to the several kinds of

Etiam si rabie correptis, omnia excrementorum genera, ut plurimum retineantur. In uno tamen vidi, maximam, & ingentem urinæ copiam, excretam, sine ullo ægrotantis sensu. LISTER Exercit. p. 154.

* MEAD's Essays, p. 147.

“ food, and to the medicines which are administered *.

The *hydropobia* is a symptom common to other diseases †; it frequently attends the phrenzy, and especially in hot countries. The sentiments of HIPPOCRATES and ARETÆUS have already been quoted.

|| COELIUS AURELIANUS defines the phrenzy to be a disorder of the *meninges*, or membranes of the brain. These membranes serve as coverings to the nerves, and of course cannot be affected, without communicating the disease, in some degree, to the brain, and to such of the nerves as are contiguous to the seat of the complaint; or by their connexion and sympathy are liable to the same impression: whatever, therefore, causes an irritation on the *meninges*, an inflammation, a fever, spasmodic contractions, or tension; whether it be an ardent fever raised by the obstruction of perspiration, or by a translocation of matter, called *metastasis*, or a sudden stoppage of the *lochia*, or *menfes*, or by any sudden passion of the mind, such as anger, or fear; any of these causes may produce a phrenzy; and from a communication of the spasmodic con-

* Pendet vero hæc diversitas, a calore tempestatis anni, a vario gradu morbi, in animali mordente, a temperie hominis morfi, quum biliosi, eo facilius vergant, pituitosi, & hydropici contra a diverso victu, medicamentis adhibitis. BOERHAAVII Aphorism. 1137.

† VAN SWIETEN Comment. tom. iii. p. 537.

|| COELIUS AURELIANUS, lib. i. cap. i. & seq.

vulsions,

vulsions, may, to the other symptoms, add also the *hydrophobia*.

In these temperate climates, diseases of so violent a nature are not so frequent as in hot countries; and whenever they do appear, their progress is not so speedy; which may be the reason why HIPPOCRATES had not an opportunity of seeing the intire *hydrophobia*, either in phrenitics, or persons bitten by mad animals; the illness destroying them on the first appearance of the difficulty of swallowing; whence they were called *βραχυπόται*, *parvibuli*. The few instances, therefore, which are met with in these climates, it cannot be improper to relate. The appearance of that terrible symptom in several diseases, and the instances, however few, in which remedies have been applied with success, may take off from that universal dread, and shew that it is not always incurable.

In *April* 1758, a farmer and grafter, about 40 years of age, of a sanguine constitution, was seized with a violent pain a little above the *pubis*; an inflammation on the neck of the bladder, and total stoppage of urine, ensued. He was bled, purged, and lenient diuretics were given him. The symptoms abated upon a discharge of purulent matter, which shewed that the inflammation had terminated in an abscess. On the third of *May* the man, having some evenings before taken cold by going after some cattle in the wet, was again seized

with the same symptoms, but to a greater degree of violence; the suppression of urine was also total, and to a high fever and *delirium* succeeded a phrenzy, and such a furious madness, as to equal the most disordered person. In this situation I found him when Mr. LITCHFIELD, an ingenious surgeon and apothecary at *Ramsay*, in the county of *Huntingdon*, first sent for me. To all the signs of madness of the most mischievous kind it must be added, that in his lucid intervals, which were chiefly in the morning, he could not on the fifth and sixth of *May* swallow the least drop of liquid: he grew outrageous at the presenting it, spitting in the faces of his nearest relations, as well as others, and telling them they meant to choke him. By plentiful and repeated bleedings, and emollient clysters, bladders half filled with warm water and milk, and applied to the *pubis*, fomentations, *pediluvia*, shaving his head, and washing it with a lotion of *elder-flower* water with *vinegar* and *camphor*, the convulsive spasms and the phrenzy were abated. Oily and *terebinthinate* clysters were injected, and when a passage could be had, lubricating, cooling, laxative, and diuretic medicines were administered, which removed the complaint. But, as he had been unavoidably brought low by the repeated evacuations, it was a long time before he recovered a settled state of mind; which, however, returned perfectly, by means of the *cortex Peruvianus*, with proper restoratives,

ratives, and change of air. At first the blood, I saw drawn from this person, was very black as it ran out; when cold, the grumous part was of a loose texture, and the serous part an entire cake of purulent jelly containing it. This appearance in the blood, was certainly a proof of the *metastasis*, or translation of matter from the bladder, which had caused all the terrible effects before related.

Doctor MEAD quotes from SCHENCKIUS, that the "*hydrophobia* has been remarked in "malignant fevers;" and from the *Ephemerides Germanicæ*, that "a melancholy has "ended fatally by this symptom." And this learned and experienced physician has seen "the *hydrophobia* last many hours in an hysterical disorder, and in a case attended with "fits of a palpitation of the heart, wherein "the violence of the symptom seemed not to "differ from the true *hydrophobia*."

That this symptom is common to nervous diseases, is also Doctor MEAD's opinion*. The suffocation called the *globus hystericus*, and so frequently met with in hysterical cases, has been produced, and increased to the *hydrophobia*, upon a suppression of the *menfes*, or of the *lochia*. I attended a young girl of sixteen years of age, of a plethoric constitution, who from a suppression of the *menfes*, on their

* MEAD, Essay on poisons, p. 147.

first imperfect appearance, had all the hysterical symptoms, to the highest degree: they were followed by a *mania*, which lasted some days. During this, she had a difficulty of swallowing*, and the *hydrophobia* two or three days, which was removed by plentiful bleedings, both in the foot and arm, and by *semicupia* and glysters; but until the course of the *menfes* became regular, she was periodically disordered every month, so that she could not be deemed rightly in her senses till that time.

I shall have occasion hereafter to mention another case, owing to the sudden suppression and retention of the *lochia*, when I come to shew the fatal consequences arising from the turbulent passions of the mind.

In the Medical Essays, Doctor INNES has recorded, very circumstantially, the case of a young gentleman who had an inflammation of the stomach, attended with the *hydrophobia*†. Although the young lady who was under my care, and of whom I have given an account in the Philosophical Transactions‡, had not only a difficulty of swallowing, but a total stoppage, so that the least drop of any liquid could not be admitted into the stomach,

* See Doctor ECCLES's Account of a great difficulty in Swallowing and *Tetanus*, in the Medical Essays, vol. v. part ii. p. 472.

† Medical Essays, vol. i. art. xxix. p. 283.

‡ Philosophical Transactions, N° 495.

nor, at times, far into the *œsophagus*; yet she had no dread at the sight of water, or of any fluid. The evacuations which she had undergone, before I attended her, might have prevented that degree of acrimony which was the cause of the *hydrophobia* in Doctor INNES's case, where the cure was at length effected by repeated bleedings, and a spontaneous vomiting.

* In that kind of catarrhal flux from the salival glands, and distension of the lymphatic vessels, which, from the seat of the disorder, the *bronchi*, is called the *brancks*, or more usually the mumps, and chiefly affects young persons about the age of puberty; upon taking cold, or an improper treatment, the serous matter is often translated from the throat to the testicles, which grow hard, and the *scrotum* is much enlarged, and becomes painful, through its weight: unless this symptom be also carefully attended to, a translation of acrid matter is sometimes, by a sudden *metastasis*, thrown upon the membranes of the brain, and this translation is followed by a fever, *delirium*, phrenzy, spasms, and convulsions; which, if not timely remedied, will prove fatal. Such a suffocation as the *globus hystericus*, is generally observed to be one of the symptoms;

* HOFFMANNI Consultationes Medicinales, tom. ii. casus cii. De testum consensu cum cerebro.

and

and from the spasmodic contractions of the muscles of the throat, a difficulty of swallowing renders such patients what HIPPOCRATES calls them, *βραχυπόται*, *parvibibuli*, small drinkers; whenever this disease, as COELIUS AURELIANUS observes, is attended with a stricture, or tension, not in case of a relaxation: both which different effects of stricture, tension, or relaxation, appear in this illness. In southern climates the translation oftner occurs than in northern countries. The first time I saw it to any considerable degree, was in the spring of 1760, when it appeared like an epidemical disease affecting the private soldiers, and chiefly the married men, belonging to both the battalions of the *Essex* militia, quartered in the county of *Huntingdon*, during the months of *February*, *March*, and *April*, particularly. The season, no doubt, prevented the violence of the symptoms, which would necessarily have followed in a hotter time of the year. I visited several with Mr. GORDON, who attended as surgeon to the first battalion: none died, although some were in a high fever; and one of my private patients was delirious. Agreeable to this, is the doctrine of the venerable HIPPOCRATES*, concerning the sympathy between several parts of the human body; and TULPIUS, on another occasion, not very fo-

* HIPPOCRATES Περὶ τροφῆς; De Alimento.

eign to the present inquiry, gives the following excellent caution *.

“ Let it therefore be carefully inquired by
“ physicians, what kind of humor nature ex-
“ pells, and let them be strictly on their guard
“ that it doth not overflow, lest it should shift
“ from a place of little moment, to a more
“ noble and considerable part.”

The intimate and strict connection between the body and the mind, although inexpressible to our limited conceptions, is nevertheless so evident from its effects, as not in the least to be doubted. Thus the diseases of the body influence the operations of the mind, and the several passions of the mind, either promote, disturb, suspend, or destroy the natural functions, and the secretions of the human body, according to the different powers the several passions have allotted them. Joy dilates, exhilarates and circulates the blood with the most agreeable sensation. Grief relaxes, debilitates and suspends the necessary streams of life. The tender passions of love and friendship warm the blood, and give it fresh vigor. The turbulent passions, on the contrary of wrath and fear contract the vessels, and hurry the circulation of the blood in so violent a manner, as to throw the whole frame into confusion.

* Inquirendum itaque curiosè, medicis, in naturam humoris a natura expulsi, & cavendum obnixè, ne facili reurgitet, a loco ignobili, in partem principem. TULPII *Observ. medicinal. lib. i. cap. ix.*

When-

Whenever these two wrath and fear are raised together, there is a terrible scene produced, if an instantaneous death doth not end the tragedy by a sudden apoplexy; a palsy, a phrenzy, or epilepsy, follow in sanguine constitutions; convulsions, tremors, *schirrus*, cancers and many weaknesse attend those of a lax and cacochymic habit of body. But the limits of this essay will not allow me to expatiate farther on these particulars, I shall therefore confine myself to the remarking only by a very strong instance the fatal effects of the violent passions of † wrath and fear operating alternately and jointly in the same person.—An instance in which not only a phrenzy, but what is much to our present purpose, a total alteration of the fluids, and an *hydrophobia* were produced.

A young woman about 27 years of age, of a fair complexion, delicate constitution, good habit of body, of a lively and sweet temper, but rather of a timorous disposition; in child-bed of her fourth child, was on the eighth day from her delivery, in a fair way of recovery, and receiving the usual congratulations of her female acquaintance. Among other visitors came a relation with whom there had been some fa-

† DOCTOR GEORGE BAKER in his dissertation *De affectibus animi* mentions the several opinions of poets, and of philosophers ‡, anger was looked upon as a temporary madness, and the spasmodic contractions through fear are elegantly described §.

† GALEN, HORATIUS, lib. i. Epist. ii. *Isa furor brevis est.*

‡ LUCRETIUS, &c.

mily disputes. This person very unseasonably revived the quarrel, and after the most aggravating provocation insulted the lying-in woman with the most bitter invectives and most opprobrious language. The by-standers fearing that even words would not satisfy her revenge, with great difficulty removed her out of the room; but irreparable mischief was already done. Anger and fear had been raised so strongly in the mind of the patient, that unable to retort any longer to the revilings of her adversary she fell into a violent hysteric fit, little inferior to the highest degree of an epilepsy*.

The *lochia* instantly stopped, the milk disappeared, a suffocation, fever, and phrenzy ensued. Early next morning I was sent for, and immediately had her blooded plentifully in the foot, *pediluvia* and clysters were used, and deobstruent bolusses given; although she attempted several times, not a drop of liquid could be swallowed on account of the frequent spasmodic contractions. Blisters were applied to the thighs and legs; the head was shaved and washed with a lotion of *camphorated vinegar* and *elder flower* water, but all my endeavors proved ineffectual. The tension was so

* Nonnulla etiam excrementa quæ in utilitatem vitæ nostræ instituit providens natura suscepto metu, sisti protinus, & cessare, res est medentibus nimium familiaris. Notum est, nimis quam gravis sit ille puerperæ, lactanti quæ, abortus scilicet inde nasci, cum læthali hæmorrhagia, sisti lochia, coire lac, &c. BAKER de affectibus animi, p. 17.

great, that neither opiates, *camphor*, nitre, nor repeated applications of bladders filled half full with warm water and milk, and applied to the *hypogastric* region could relax. The nervous contractions increased so fast, that general convulsions succeeded with such perturbations of mind upon their remission, that the least sight of a pellucid object, the light, the least noise or rustling of cloths alarmed her with the fear of her relations return. Thus she continued three days. A few hours before her death she recovered her senses, but could neither swallow nor bear the sight of liquids; she then knew me, and told me that she doubted not I had done my utmost to save her, but that it was to no purpose; and laying her hand upon her heart, added, that she was wounded too deeply there.

A symptom not to be forgotten, and which shewed the violence of the fever, was, that no urine was discharged but by force, at the time of her convulsions when they were the stronger, and then it was as a jelly of the most tenacious kind. The celebrated professor HOFFMANN *, has recorded the violent effects of anger and fear in several of his observations, and imputes the appearance of the various symptoms to the irregular circulation, and

* HOFFMANNI Consultationes medicinales. De terroris indole, tom. i. p. 20. casus vii. De terrore in puerperis, tom. i. p. 196. casus xxxvii. De effectu terroris, & ira, tom. ii. p. 225. casus xlvii, &c.

want of a due secretion of the fluids, which the passions of the mind suddenly bring on; and his prescriptions all tend towards the removing the tension and obstruction.

Thus from the several instances produced from authors and others just related, the *hydrophobia* appears to be a symptom common to several diseases, and particularly in cases attended with spasmodic contractions of the nerves of the throat, and increased by the violent passions of the mind, chiefly anger and fear. The sight of liquids or of any pellucid object, equally act on the unhappy person, whatever be the cause that produces the pain; for the admission of liquids in the least quantity conveys down the *œsophagus* into the stomach, the putrid, acrid *saliva*, which irritates the upper orifice * and nervous coat of the stomach, and the *œsophagus* already inflamed, the *mucus* being dried up by the constant swallowing of the acrid particles; the sight also of a glass, of a white wall, or a glaring light striking strongly upon the *sensorium commune*, awakens the remembrance of the accident which has happened, and revives all the terrors which the bite of a mad animal had occasioned †. The

* At salivam deglutire, ei horrendum fecit, perinde ac si mortem ipso momento inferret. Vide historiam JACOBI CORTON in exercit. iii^a. LISTERI p. 117.

† There be sights that are horrible, because they excite the memory of things that are odious and fearful. BACON's *sylva sylvarum* experiments touching, pleasing or displeasing the senses, cent. vii. § 700.

hydrophobia *, therefore, is a constant attendant upon such acute diseases, as are dangerous through stricture and tension; and more particularly in the bite of a mad dog. Whenever this severe symptom appears, it is the more fatal; the greater the tension and inflammation, the longer the symptom has lasted; and from the different rigidity of the fibres, it is by far more difficult to remove in men than women. The signs of its approach, and the symptoms that usually attend it, have been sufficiently described in the former section.

* *Hydrophobia est morbus acutus. LISTER exercitatio*
iii. p. 106.

SECTION III.

Of the different Methods of Cure.

THE different methods of cure, for the effects arising from the bite of a mad dog, are either rational or empirical.

By the rational is to be understood, the internal administration or external application of such remedies; which by experience, are found to remove or prevent the complaint in certain constitutions and circumstances of the distemper, and whose efficacy, may in a great measure be accounted for, by arguments founded upon observation, and according to the known power of medicines without the least presumption of their being infallible.

By the empirical cure, I understand the indiscriminate use of any *nosstrum* or known medicine, in all degrees of the same illness, administered or applied to all constitutions and sexes, and in all ages, with a positive assurance of an infallibility, and whose operations are not only of a violent, and dangerous, or wholly insignificant nature, but will neither bear the test of examination by reasoning, nor a scrutiny into their success, the cases being frequently misrepresented, or the fatal consequences suppressed.

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It must be owned, that mere accident has produced both in the early days of practice; and medicine hath gained great advantages from the observation of, and a due attention to, the *juvantia* and *lædientia*. Thus a rational method of cure, took its rise from accident, presumption and empiricism.

Was the world, with all its improvements in this enlightened age, sufficiently guarded against impositions, there would be no longer a necessity of dwelling upon the consideration of such absurdities, as are so many reproaches to the human understanding; but while through tradition, plausible authority, or presumptuous practitioners, mankind is still deluded, it behoves every one, who has the welfare of his fellow-creatures at heart, to point out to them the dangers which they run, by confiding in an empirical rather than a rational method of cure.

The plea of empirics is, that seldom doth any distemper appear in any person, as described by any systematical writer, and therefore facts are only to be relied on. Certainly, many circumstances may occur, to vary the appearance of an illness in different constitutions and situations; but whoever is furnished with a summary of the several symptoms of a disease, will be the readier to relieve the distressed, than by following indiscriminately the same method in every case, because he saw it succeed in one.

Systems unsupported by facts, are fruitless *hypotheses*; but when reason and experience agree, although they will never be infallible, yet they will jointly afford the greatest probability of success.

Both the rational and empirical methods, may be divided into the preventive or the actual cure. I shall begin with the empirical method.

And first, the most dangerous and absurd notion still prevailing in some distant ^{places} ~~ages~~, is, that if a person bitten by a mad dog, can immediately get the liver of the dog, and eat it raw or broiled, it is a means to prevent the progress of the disease. Every author, now a days, judiciously pronounces, that such a distempered liver is neither good for food or physic †, the bile contained in it being of the most vitiated kind; and although it has not yet been discovered, whether such bilious salts admitted into the stomach have only like other putrid humors produced a *nausea* and *diarhœa*; or, if passing into the blood, they have excited the same madness, as the bite of a mad dog; one may venture to declare an utter abhorrence of such food, and that it can be of no other account, than as it may procure some quiet to the patient's mind, by laying asleep for the present his apprehensions of the usual consequences.

† MEAD'S Essay on poisons, p. 158.

These notions which Doctor LISTER calls the superstitious fancies of ancient times, seem to prevail still in *Ireland*, among the lower sort of people, and to obviate the repetition of such a shocking scene, as was related in a letter from *Gallaway*, inserted in the public news-papers, and dated the 11th of *February* 1760, I have been the more serious to explode such an absurd practice. I will relate the material circumstances of the horrid tragedy in the most tender manner possible.

“ A gentleman in the neighbourhood of
 “ *Slave Muree*, in the county of *Gallaway*,
 “ writes word. That a young man, who had
 “ been bitten by a mad dog, almost three years
 “ before, was married to a young woman of
 “ *Slave Muree*, and the very night of their nup-
 “ tials, the relations alarmed at the cries of
 “ the woman, burst into the room and found
 “ him with her liver in his teeth. A knife
 “ in his hand, and his wild aspect not to be
 “ described, would not permit any one to ap-
 “ proach him ; and to prevent further mur-
 “ der, his own brother was tempted to shoot
 “ him ; but he was secured by a noose thrown
 “ over his neck, and tied down.”

This case plainly shews the necessity of putting a stop to such a dangerous notion ; for no doubt, his imagination being heated, and the latent *virus* breaking forth, brought to his mind the representation of the dog, whom in the rage of phrenzy, he thought he was destroying;
 and

and that, with the prepossession of curing himself, by eating of his liver.

The curd of a sucking puppy's milk, or the hair of the mad dog intended as a cure for the wound he gave, are applications to be laughed at.

The next ridiculous and idle tale, is the boasted effects from the presenting a *Hyæna's* skin to the person bitten, or tying a piece of the same creature's skin in a linen rag on the wounded limb. The notion, it is said, takes its rise from an aversion dogs have naturally for *Hyænas*; from whence it is strongly conjectured, that this canine distemper should be removed on the sight or touch of the *Hyæna's* skin, and the venom at once frightened away by this sort of amulet.

The root of the *cynorrhodon*, the dog-rose, is now thought of no efficacy, although PLINY extolled it much; nor is much stress laid on the other properties of the *spongia cynorrhodi*, the sponge of the dog rose; but this shall be mentioned in speaking of the rational process of cure.

Among the empirical jumbles not to be trusted to, are the several *theriaca* *, confections, and specific antidotes hitherto recommended, to expell this poisonous venom, and which would much more speedily and effectually assist the mischievous effects of it.

Nor are family *nostrums* of any kind to lull any person into a fatal security, for they are

* See Doctor HEBERDEN's Essay on the *Mitridatism* and *Theriaca*.

generally nothing more than mutilated copies of prescriptions transcribed full of errors, and frequently directed for an opposite intention, notwithstanding the sanction of being carefully handed down, from year to year, in the same families.

I now proceed to the rational cure. This consists in such external applications, or internal remedies, as are administered, either to prevent the progress of the inoculated *saliva*, that it may not spread it's infection, or to remove the bad effects of the poisonous *virus*, when it has already insinuated itself so far, as to produce the greatest mischiefs, and endanger the patient's life.

In the examination of the several methods directed, I shall endeavor to account for the intention of each practice.

First, In order to extract the *saliva* which by the bite may have been deposited in the wound. The ancients advised the application of || cupping-glasses †, to draw out the *saliva*; and made a plentiful discharge of blood by applying the *scarificator*: but this operation will not insure the removal of the *saliva*.

Nor will the sucking of the wound *, to extract the *saliva* of a mad animal, be either safe, or to be depended upon: for although the venomous *saliva* of vipers has been sucked,

|| CELSUS, lib. v. cap. 27.

† PALMARIUS, p. 336.

* Ibid. p. 338.

and

and received into the stomach without any bad effect; yet it remains doubtful, whether that *saliva* lodged in a carious tooth, or admitted into any the smallest wound, in the mouth, would not be attended with fatal symptoms; much more imprudent would it be, to apply the mouth to the bite of a mad dog, whose *saliva*, once admitted among the glands, or into the least wound, might produce the dreadful disease: and in this operation there is not a certainty of extracting the poison to authorise such a dangerous practice.

REDI, in his Natural experiments on the poisonous effects of the *saliva* of a viper, p. 263. says, that the admission of the poison depends on the sort of wound made: if too small, the *virus* will hardly penetrate; if too large, the effusion of blood will be so considerable, as to bring away the poisonous *saliva* along with it. Hence appears the use of immediate scarifications, without cupping, where the part will allow of them.

Secondly, To enlarge the wound, either by dilatation, or by taking the piece out which the dog had bitten, seemed a surer way of dislodging the poisonous *saliva*; but, as Doctor MEAD observes, the severity of such a practice is needless; since it cannot always be done in time, nor can it be known whether the *saliva* has made any impression, or not.

The same may be said of cauteries, whether actual, or potential; such as a red-hot

iron, caustics *, corrosive or irritating ointments, blisters, or drawing plaisters || ; whose application is more painful and terrifying to the patient than promising, in it's consequences of success †. Issues are recommended, by ÆTIUS, to be kept a long while open.

Some have advised the rubbing a pickle of *salt* and *vinegar* on the wound ; Doctor PARSONS has lately recommended it : and the Rev. Dr. JARED ELLIOTT has seen the success of it in *New England* and *Connecticut*. A surgeon of Doctor PARSONS's acquaintance, also, has successfully made use of the *spirit* of *salt* with the same intention, to resist acrimony and putrefaction. Others have washed the wound with a *lixivium* of *oak ashes* and *urine*.

Emollient cataplasms of *bread* and *milk*, either by themselves, or together with opiates, as the *theriaca*, or pure *opium*, have been laid on the wound to assuage the pain, decrease the irritation, and relax the fibres. Others have made pultices of *sorrel*, *rue*, roasted *onions*, bruised *garlic*, *leeks*, *yeast*, *mustard seed* and *salt*, and *oil* of *scorpions*, to irritate the wound, and cause a discharge of the poisonous *saliva*. Some have anointed the part with *oil* and pure *wine* mixed together, or have washed it with fat broth. And the *anus*

* LISTER, Exercitatio iii^a, p. 136.

|| PALMARIUS, p. 337.

† FREIND Opera, p. 146.

of an old cock is directed to be put to the wound, to draw out the *virus* *.

† Bleeding, even till the person is faint, has been practised with great success, especially in sanguine and plethoric constitutions, to remove the fulness and irritation, and to prevent the stricture and tension, both as a preventive cure, and in the confirmed state of the illness; and yet some disapprove of bleeding, at first, lest the *virus* should be drawn in, from the external parts, to circulate with the blood all over the body.

So generally has almost every nation adopted the notion, that the immersion, or plunging the person bitten into the sea, is an infallible cure, that whoever has been found to controvert it, has seldom been hearkened to: but, among other instances which might be produced of the inefficacy of this custom, and that the only advantage accruing from it, is to quiet the person's mind who has been bitten; Doctor DESAULT relates ||, that his uncle DAUBAIGNAN, and DUFOURC his fellow student, both died mad, although they were both dipped in the sea, and went to the sea-

* PALMARIUS, p. 337.

Philosophical Transactions, N° 191. p. 140.

† SPEED Commentarius de Aqua marina, p. 25.

Doctors HARTLEY and SANDYS account of a person cured of the *rabies canina* by losing 120 ounces of blood, Philosophical Transactions, N° 448.

|| DESAULT Dissertation sur la rage, p. 287, 288.

shore the very next day after they had received the bite: and adds, that he could easily swell the bulk of his Dissertation, were he to mention the great number of unfortunate persons to whom bathing, or, as he describes it, forcibly plunging *, into the sea, was of no sort of use.

Immersions are recommended and first mentioned by CELSUS †, who says, “ It is “ the only remedy ;” and advises to “ throw “ the person unawares into water, and, if he “ cannot swim, to be kept under water, that “ he may swallow it, and then, at times, be “ lifted out of it; if he can swim, to hold “ him under by force, that he may drink, “ whether he will, or not: by these means “ the thirst and dread of water will be re- “ moved at the same time.”

As CELSUS makes use of the word *piscinam*, a fish-pond, or pool of water; it is plain, he means fresh, not salt water. VAN HELMONT ‖, in the beginning of the last century, observing the good effects of plunging in the sea in *Flanders*, strongly recom-

* Ibid, p. 288.

† Unicum remedium est, nec opinantem, in piscinam non ante ei provisam projicere, & si natandi scientiam non habet modo merum bibere pati, modo attollere; si habet, interdum deprimere, ut invitus quoque aqua satietur. Sic enim simul, & sitis, & aquæ metus tollitur. CELSUS, lib. v. cap. 27.

‖ VAN HELMONT, *Ortus Medicinæ*,

mends the practice; and Monsieur MORIN relates †, that a young girl, of 20 years of age, had all the symptoms of madness, which appeared sixteen days after her being bitten in the hand, by a little boy who was mad, and was brought to bear the sight of water, without emotion, by being plunged into a bath made of river water, rather cold than hot, in which a bushel of salt had been dissolved. Nothing extraordinary followed; a fever came on, which was treated in the common method: she took emetics, continued the use of bathing, and was cured.

One would imagine that CELSUS had two intentions in his method of immersion: first, by throwing the patient into water unprepared, and unexpectedly to cause such a surprize as would give a strong shock to the human frame; secondly, by half drowning him, to make him swallow a quantity of water before the *hydrophobia* comes on.

From the nauseous taste of sea water, the awful appearance of the sea, and the approach of it's roaring billows, strong effects may arise, in a person who never saw the sea before; and more especially, if in the most terrifying and forcible manner they are plunged, and half drowned. The sea water is never so cold as fresh water is, and therefore cannot act on the fibres with the same constriction

† Histoire du Vénérable Académie des Sciences, année 1699.

which

SIR JOHN HINDE COTTON's seat at *Maddingley* in that neighbourhood. The first immersion freed the patient of both the *hydrophobia* and madness. A month after, on the return of these symptoms, he was again plunged, and once more relieved: but, upon relapsing a third time, at the next full moon, and his being again put into the cold bath, he was seized with a total distension of the nerves, and immediately died convulsed in the water.

Doctor SPEED*, who has wrote a very judicious and elegant commentary on sea water, tells us, that it has been a custom long since, to bathe in the sea for the bite of a mad dog: and that, provided the persons bitten bathe before the madness comes on, it often answers; but after it's appearance, bathing in the sea is never to be relied on. The Doctor adds, that he has by him the case of a girl, who, in the year 1707, having the *hydrophobia* strongly upon her from the bite of a mad cat, was perfectly cured by frequent scarifications of the wound, repeated bleedings, blisters, purgatives, and sudorifics: but as neither in this case, nor in any other, in the course of that great experience which Doctor SPEED, and his father, must have had of the utility of sea bathing, any mention is made of it's efficacy; it seems probable, that the boasted cures performed in this illness by sea water, have been wrought on such persons who have

* SPEED Commentarius de Aqua marina,

to the sea shore, supposing themselves in great danger, when the dog, who bit them, may have never been mad. Undoubtedly cures so remarkable, and of so much consequence to society, would not have escaped Doctor SPEED's notice.

To Doctor DESAULT's testimony of the inefficacy of sea bathing, for the preventing the *hydrophobia*, at or near *Bourdeaux*, may be added, the observation of Monsieur CLAUDE DU CHOISEL *, a *Jesuit*, and apothecary to the mission of *French Jesuits* at *Pondicherry*. His words are;

“ Bathing in the sea has hitherto been
 “ looked upon as an infallible preservative
 “ against the bite of a mad dog. The ex-
 “ perience which I have had of it in all those
 “ patients who were not treated according to
 “ my new method, has proved to me the fal-
 “ sity of that opinion. They bathed them-
 “ selves every day in the sea, but to no pur-
 “ pose, not one of them survived the bite
 “ longer than thirty or three and thirty days.
 “ I do not, however, disapprove of those
 “ bathings, where they serve to quiet the
 “ minds of the patients. Besides, the *In-*
 “ *dians* usually bathe themselves every day.
 “ We are situated here on the sea shore, and
 “ it is a matter of indifference whether a few
 “ waves of sea water pass over their bodies, or

* Du Cr ———— treating persons bit by mad animals, p.

“ they

“ they wash themselves in a pond. In this
 “ hot country there is no danger of obstructed
 “ perspiration, or pleurifies. If I were at a
 “ greater distance from the sea coast, and in
 “ a cold country, I would have nothing to do
 “ with such sort of remedies, which I look
 “ upon as entirely useless, in the cure of this
 “ disease.”

Bathing in the sea has not, then, such advantages, as may not be procured by other means. For if the chief be the emptying the stomach of the acrid bile, by the swallowing of the sea water, this operation can be much more easily performed : and as to the immersion, the water is not cold enough ; nor will any one recommend the forcible plunging, for the reasons above mentioned ; and persons will be to the full as much satisfied in their minds, when they are convinced that an easier method of cure is practised than that of hurrying them into the sea, where there is not the same probability of success.

CELSUS * not only recommends bathing in a pond as preventive cure, but even in the violence of the *hydrophobia* : adding, however ; “ that care is to be taken lest a tender
 “ constitution, being affected by cold water,
 “ should be seized with a distension of the

* Sed aliud periculum excipit, ne infirmum co-
 aqua frigida vexatum, nervorum distentio absumat.
 incidat a piscina protinus in oleam calidam dem-
 CELSUS, lib. v. cap. 27.

“ nerves. To prevent which, says he, let
“ the person be instantly conveyed from the
“ pond into a bath of warm oil.”

Professor BOERHAAVE, from CELSUS, directs cold bathing in the same manner as practised by the ancients, or to throw cold water on the person till the dread of water ceases. This method is thought to be rather exposing the patient to a greater tension and stricture of the parts. Doctor MEAD recommends cold spring or river water only as a preventive, and after bleeding to promote perspiration, and a flux of urine. Professor HOFFMAN prefers the use of temperate baths, in all strictures of the nervous parts, and moderate draughts of wine, to promote the circulation of the blood. The difference in opinion, between Doctor MEAD and professor HOFFMAN, with regard to cold or temperate bathing, may be reconciled by observing, that they are each directed in a different stage of the illness, and therefore are advised to be used accordingly. The constitution of the patient, time of the year, but especially the sort of infection, whether putrid, or not, ought certainly to be attended to; and unless bathing be cautiously ordered, it will oftner prove prejudicial, than salutary.

Internal medicines, of various kinds, were prescribed according to the practitioner's intention, either to prevent the ill effects of the
poi-

poisonous *saliva*, or with a view to expel it out of the body.

Thus, first, to cool and quench the thirst, the herbs *purslane*, *wood sorrel*, and *sorrel*, were recommended; also, *burnet*, *burnet saxifrage*, *rue*, and *chervil*, as diuretics; *marigolds*, *borage*, and *mint*, to warm and stimulate; and *lettuce*, to procure sleep*. The plant and stalk of *black currants* † is still looked upon in *Sweden* as no contemptible remedy in the *hydrophobia*. It is well known, that in such countries which are liable to putrid and bilious fevers, the infusion of *black currants* leaves is in great esteem; and a jelly of those currants, made with sugar, is highly commended in contagious diseases, and some sore throats. That all vegetable acids correct the too violent acrimony of the bilious salts, is the opinion of BOERHAAVE, HOFFMAN, MEAD, HUXHAM, and almost all modern physicians; but this is only a palliative cure. I therefore proceed,

Secondly, To consider the intentions for which more powerful remedies are administered.

* PALMARIUS, p. 343.

† See Mr. JOHN GEORGE BEYERSTEIN's *obstacles to the improvement of physic*, in *Miscellaneous tracts translated from the Amœnitates Academicæ Upsalensis*, by Mr. STILLINGFLEET, p. 173.

I. * Some were designed to sheathe the humor, and carry it down; as the *oil of roses*, drank to five ounces †: as purgatives, the expressed *oil of walnuts*, the nuts themselves, and *biera picra*. But the most efficacious medicine, both as a purgative, and an emetic, and which has not only been greatly extolled by the ancients, but is still made use of, with success, to this day, and particularly for dogs, and other quadrupeds, is the *white bellebore* ||: one dram of this root, powdered, and drank in a draught of milk, or forced down, made up into a *bolus* with a little butter, has operated so strongly, both as an emetic, and purge, as to carry off all the symptoms which had appeared. The sooner it is given after the bite is received, the less irritation is to be feared from it's operation; but, lest the patient

* *Oils* have been both recommended and forbidden even so long as in GALEN's time. BAGLIVI condemns the too general use of *oil* in *Italy*; and BIANCHI says, that he has known bilious fevers increase after the *oil* of *sweet almonds* had been given. BARON VAN SWIETEN, in his Commentaries on BOERHAAVE's Aphorisms, declares, That the mildest and softest *oil*, when spoiled, is of the most putrid nature. The sweeter *oil* of *almonds*, that is expressed, grows so rank and corrupted in a few days, as to become very sharp, and scalds the throat while it is swallowing down. Aphorism 89. p. 130.

† LISTER loc. cit. & in historia JACOBI CORTON.

|| Illud quidem verum est, hoc medicamentum pituitam vehementer movere, evacuat^{am} salivæ venenatæ proxima materia^{possit}.

LISTER.

DIOSCORIDES, lib. iv. c.

should be too much weakened, the persons who advise this root, caution their patients against bleeding.

I was informed by the late Mr. HENRY BLAINE, of *Hartford* near *Huntingdon*, who had experienced the effects of the *white bellebore*, in many dogs, that he had successfully administered it in all stages of the disease, nay, when the fury and *hydrophobia* was so strong on the dog, that no one dare approach him: and the method he used was, to fasten the dog's head down between the prongs of a pitch fork, and then thrust down the ball made of the powdered *bellebore* and butter. *Hellebore* is also given, by way of sternutatory, or echrine, in clysters, and applied in the form of a suppository.

PALMARIUS reports*, that dogs having taken *bellebore* with *polenta*, were vomited, and immediately relieved from their madness. This method, taken from DIOSCORIDES†, arises from a practice very common among the ancients, both *Greeks* and *Romans*, to drink large quantities of the *polenta*, to strengthen their stomachs, and cure them of a *diarrhœa*. The *polenta* is a decoction of oat bread toasted, in spring water, till it be of a brown color like coffee. PLINY says, that in his time it dif-

* Addunt nonnulli, canes rabiosos, ellebore ~~sumunt~~,
lenta accepto vomuisse, & statim a rabie liberatos
diisse. PALMARIUS, p. 339.

† DIOSCORIDES loco citato.

ferred from barley meal in that it was much toasted, or parched, and sometimes the *Romans* mixed a little *linseed* with it, some *sall*, and *coriander* feed. It is mentioned by HIPPOCRATES*; ARETÆUS, and PAULUS ÆGINETA; and especially recommended for the cure of the *cholera*†. Doctor CHARLES AYTON DOUGLAS has revived the use of this decoction in *Scotland*, and given an account of it's efficacy, both on himself, and others. Doctor DOUGLAS orders it to be made out of bread baked without any leaven or yeast, carefully toasted as brown as coffee, but not burnt: as occasion requires, he sometimes adds wine to the decoction. Somewhat similar to this practice is the use of *barley water*, *toast and water*, and *water gruel*, drank chiefly in ardent and bilious fevers; and from the preference which Doctor TISSOT || observed his patients gave to *oatmeal*, agreeable to professor BOERHAAVE's opinion, it may be fairly concluded, that in the disease produced by the bite of a mad dog, the *polenta* will prove as efficacious as in the *cholera*.

Some have given an infusion of the leaves of *rue*, of the inner bark of *elder*, of the inner green bark of *box*, to vomit and purge

* HIPPOCRATES De affectionibus.

ARETÆUS, lib. ii. cap. =. p. 102, 104.

PAULUS, lib. ii. cap. viii.

† See the text.

|| 7

p. 75.

dogs; or those ingredients dried, and powdered, and made into cakes with flower and milk.

Professor BOERHAAVE advises clysters of *salt water*, with *nitre*, and a little *winegar*, both to purge, and cool.

II. The ancients, in order to expel poisons through the pores of the skin, had their *alexipharmaca* and *theriaca*; the first to remove the poisons of the mineral or vegetable kind, and the latter the poisonous *virus* of animals. For those purposes, they ordered all the warm spicy medicines they could collect: not only those renowned jumbles known by the name of *mithridatium* and *theriaca*, but also the pancake composed of oyster-shells, &c. which Doctor DESAULT records; the famous *Sicilian* antidote made by APULEIUS CELSUS, and yearly sent over to *Sicily*, as SCRIBONIUS LARGUS relates, were directed; but additions of the ashes of *fresh water crabs**, calcined oyster-shells, and of the filings or powder of *tin*, have been made, by way of precipitating or dispersing the venomous particles. The first was recommended by GALEN, ORIBASIUS, ÆLIUS RUFUS, and POSIDONIUS; and the *crabs* were directed to be calcined with the tenderest twigs of the *white vine*; these ashes were to be well sifted, and mixed with the powder of *gentian root*, to which

* DIOSCORIDES loco citato.

sometimes added *frankincense*, as DIOSCORIDES advises*: but giving *tin* is of a later date, and was much extolled by Sir THEODORE MAYERN, and DOCTOR GREW, and is commonly known by the name of *the pewter medicine*. There is very little difference between this remedy, as described in the Philosophical Transactions: DOCTOR BATES's *decoctum ad morsum canis rabidi*, and the *decoctum antilyssum* of DOCTOR FULLER; being composed of filings of *tin*, of *garlic*, and *rue*, boiled in wine, or strong *ale*, to which is added *London* or *Venice treacle* and *mithridate*.

From the chief ingredients of these compositions one may easily conclude, that their efficacy was expected from their pungency and warmth. As preservatives against contagion, *garlic* and *rue* were anciently taken; all kinds of *treacles* and *mithridates* have been thought to expel venom; and *tin* has been looked upon as a certain *vermifuge*; but yet no reliance is to be made upon these preparations, to remove the effects arising from the bite of a mad dog.

III. The next intention seems to have been to discharge the poisonous *virus* through the urinary passages by means of diuretics. With this view was the *spongia cynorrhodi*, or sponge of the ~~dog-rose~~, directed; which, from its ef-
~~fects in the urinary passages~~ *Wed all-beal*. The plant

alyssum,

abyssum, or *madwort*, *garlic*, *agrimony*, and *oxylapathum*, *sharp-pointed dock*, were also highly recommended. The effect of the *spongia cynorrhodi* is attributed to the great number of insects in that excrescence; whence, from its animal salts, it is deemed a diuretic: and, for this reason, Doctor MEAD says*, that the learned BACCIIUS, upon the authority of RHAZES and JOANNES DAMASCENUS, recommends *cantharides* infused in butter-milk, and made up into troches with flowers of *lentils* and wine; and Doctor KRAMER † boils ten grains of the fine powder of *cantharides* in an ounce and half or two ounces of the best *vinegar*, which is given warm to the patient in the *hydrophobia*. Whether this preparation destroys the troublesome, nay dangerous effects of the *cantharides*, I will not take upon me to determine; but as these insects abound with acrid diuretic salts, it is probable, they will produce, at least increase, the *priapisms*, the known consequences of *cantharides*, whether applied in blisters, or given internally in any form. The smallest blister will produce a strangury, in hot and bilious constitutions, notwithstanding it should be armed with *musk*, or well rubbed with *camphor*; and even half a grain of *cantharides*, powdered, has brought on a strong *satyriasis*, or *furor uterinus*.

* MEAD's Essays on poisons, p. 161.

† *Commerc. Norimberg.*

when given to youthful and vigorous persons of a warm constitution.

The *pulvis antilyssus*, first recommended by Mr. GEORGE DAMPIER, and communicated by Mr. SOUTHWELL to SIR HANS SLOANE, was published in the Philosophical Transactions*; wherein SIR HANS SLOANE describes the plant to be not the *Jews-ear*, but the *lichen*†: and in 1721 Doctor MEAD desired this powder should be inserted in the *Pharmacopœia Londinensis*.

Whatever success may have attended the *pulvis antilyssus*, it is certainly a powerful diuretic, and professedly ordered by Doctor MEAD with that intention, as a preservative against the progress of the poisonous *saliva* of a mad dog. Doctor MEAD was too well acquainted with the uncertainty of this climate, not to be convinced, that, of all the secretions by which the saline particles of the poisonous *saliva* could be discharged, there was none so likely to be obstructed as perspiration: and knowing, that, next to the discharge through the pores of the skin, the kidneys carry off the greatest quantity of lymph, and supply the want of perspiration; it was very consistent, in that great physician, to direct a remedy which he knew acted as a powerful diuretic. But it has been questioned, by some

* Philosophical Transactions, N° 237.

† *Species of this plant taken from Mr. RAY, in poisons, p. 166.*

experienced physicians, professor BOERHAAVE, Baron VAN SWIETEN, and our accurate and ingenious botanist Doctor WATSON*, whether the *lichen cinereus terrestris*, or *ash-colored ground liverwort*, is endued with that quality which Doctor MEAD attributes to it. From the Doctor's examination of this mossy plant so classed by professor DILLENIUS, the several portions of acid water, oil, and coal, containing fixt salt which were produced, by distillation, will determine the question, Whether it be a diuretic, or not? and suppose this plant not to have all the desired efficacy, the other ingredient in the prescription will easily be shewn to be sufficient, of itself, to have answered the intended purpose. In the original receipt, in Mr. DAMPIER's family, the proportions of the *liverwort* and *black pepper* were equal; but Doctor MEAD reduced the quantity of pepper to only one third of the whole, lest the pepper should be too hot. Whoever will inquire into the opinion of the ancients, may take the following extract from that great naturalist Lord BACON†. "Pepper, says he, "by some of the ancients is noted to move "urine, when given in great quantity; which, "being given in small quantity, moveth wind "in the stomach and guts, and so expelleth "by stool. But being in greater quantity, "dissipateth the wind, and itself getteth to

* Philosophical Transactions, vol. I. part ii. p. 681.

† BACON's Sylva Sylvarum, cent. i. v. 44.

“ the mesentery veins, and so to the liver and reins ; where, by heating and opening, it sendeth down urine more plentifully.”

Thus it appears, that pepper was, many years ago, acknowledged to be a diuretic ; and therefore the *pulvis antilyssus* may have answered Doctor MEAD's intentions, in many cases, although it was never looked upon, by that excellent physician, as an infallible remedy, any more than any other medicine. He well knew, it would not succeed in such cases where it might heat too much : he purposely, therefore, lessened the quantity, to prevent heating, and gave it in warm milk, that it might sheathe and lessen the acrimony of the *saliva*, carry the powder more easily through the first passages, and so into the blood. DIOSCORIDES * and PALMARIUS recommend the use of milk in all cases of poisons : and as in the disease arising from the bite of a mad dog, the bile is visibly affected, the acescent quality of the milk renders it the more useful to correct the acrimony of the bilious salts. Doctor MEAD never imagined the *pulvis antilyssus* could be of use when the *hydrophobia* was once come on : it is therefore plain, that, after bleeding, he directed this powder as a preventive cure, to discharge the acrid salts by urine, which cold bathing would also assist.

* DIOSCORIDES De victus ratione demorsorum a cane rubioso in theriaca, cap. ii. PALMARIUS loc. cit,

IV. The poisonous effects of the *saliva* of a mad dog have very strenuously been asserted, by Doctor DESAULT *, to arise from worms contained in the *saliva* of the dog, and propagated in whatever creature it be inoculated; but the dormant state in which this *virus* hath lain many years, before it hath broken out, is a sufficient argument to overthrow that *hypothesis*, however supported by the authority of BONETUS, ETMULLER, AVICENNA, and others. With a view of destroying those insects, he adopts and recommends the boasted powder prescribed by PALMARIUS, consisting of bitter and *vermifuge* herbs; to which Doctor DESAULT adds the *coralline*. PALMARIUS's† powder consists of, the leaves of rue, vervain, the lesser sage, plantain, polyody, common wormwood, mint, mugwort, bastard baum, (*melissophylon*,) betony, St. John's wort, and the lesser centaury, of each equal weight. These are to be dried, and powdered, and half a drachm of the powder is to be taken upon an empty stomach, and three hours before meals either with twice the quantity of sugar, or in wine, cyder, broth; or with honey, or butter, in the consistence of an electary.

However ineffectual this prescription must appear, to every one who considers the case

* DESAULT Dissertation sur la rage, article ii.

† PALMARIUS, p. 344.

for which it was intended *, yet the same intention has produced one of the most salutary effects that mankind could receive, by suggesting to Doctor DESAULT a far more easy, and more certain preventive cure. He says, that from seeing worms of various kinds, and almost all sorts of verminous insects, and cutaneous eruptions, destroyed by *mercury*, he was induced to try what a mercurial unction would do.

This method of preventing the ill consequences of the bite of a mad dog, by a mercurial friction, was attended with all the favorable success, Monsieur DESAULT, the first inventor of it, could desire; and has since, by repeated cures, both in *Europe* and *Asia*, confirmed the utility of this practice.

His method is, to rub upon the wound, and all over the adjacent parts, one or two drams of an ointment made of, *one third part of mercury revived from cinnabar, one third part of human fat, and as much of hog's lard.*

The frictions are repeated every other day, in the beginning; after the third time, every third day; after the sixth, every fourth, till two or three ounces of the ointment be used; always proportioning the quantity to the strength, age, constitution, sex of the patient, and the state of the bite.

* See the note

But should the patient have applied, many days after the bite; he then orders the frictions to be daily repeated every day, for four or five days.

Doctor DESAULT very sensibly adds *, that should the *mercury* occasion a slight salivation, it could not but be attended with good success: for, says he, the poison of the *rabies*, sticking to the *saliva*, and *mercury* naturally taking its course towards the mouth, can it be doubted that this sovereign antidote, in many disorders, should not also destroy that which occasions the *hydrophobia*?

Common experience testifies, that, in the cure of venereal complaints, where *mercury* is applied, and a salivation is to be prevented, emollient clysters, or the mildest laxative and diuretic purges, turn the course of the humors, and prevent the usual effect of the *mercury* upon the salival glands; so that, in this present case, where the tainted *saliva* is to be discharged, a salivation may be either encouraged, or checked, as the practitioner thinks most expedient.

Doctor DESAULT makes no alteration in the person's food, or meals, provided he avoids all excess. He allows the moderate use of wine, to raise the patient's courage; and strongly recommends, that, far from leaving the person alone, he should be constantly in cheerful company; who, however, must be careful ne-

* DESAULT Dissertation sur la rage, p. 305.

ver to let their discourse turn on such subjects as have any relation to the patient's case.

The late Mr. JOHN DOUGLAS, a surgeon of great abilities, published in 1738, on a single half sheet of paper *, his recommendation of the mercurial friction, for this very disease. He directs one dram of a mercurial ointment, consisting of

One pound of pure quicksilver, and the same quantity of human fat, and of hog's lard, and two ounces of clarified turpentine, mixed according to art,

to be rubbed into the wounds, and parts adjacent; and Doctor MEAD's *pulvis antilyssus* to be taken every morning in a glass of wine and water, water, or cow's milk warm. The unction is to be repeated every evening, and the powder every morning fasting, during three weeks, leaving off the unction two or three days when the mouth begins to be sore, to prevent a salivation. Then the *mercury* is to be purged off, and in about three weeks or a month after, when the patient has recruited, he is to use the cold bath.

It is plain, from these directions, that Mr. DOUGLAS's intentions were to discharge

* A sure method of preventing, and the most probable way of curing, the *hydrophobia*, i. e. the dread of water, after the bite of a mad dog; a disease hitherto found incurable by the practitioners of all nations. By JOHN DOUGLAS, Surgeon, and F. R. S. - 1738. Given gratis in *Lad-lane* near *t*

the poisonous *saliva*, by the salival glands, by perspiration, and by the urinary passages. Where the *hydrophobia* is come on, he advises plentiful bleeding, and the rubbing in a large quantity of the ointment into the *axillary* and *inguinal* glands, and all over the limbs.

To these intentions of discharging the poisonous *saliva* of the mad dog, through the salival glands, the pores of the skin, and the urinary passages, by *mercurial* applications, Monsieur DU CHOISEL's method is to be subjoined, as more efficacious in the climate he lives in.

In those hotter climates, the mercurial ointment is used with equal success. Monsieur DU CHOISEL *, apothecary to the *Jesuit* mission at *Pondicherry*, in the *East Indies*, makes an ointment of

One ounce of crude mercury, extinguished in two drams of turpentine; of mutton suet three ounces.

The heat of the climate determines Mr. DU CHOISEL to prefer *mutton suet* to *hog's lard*. He rubs in one dram upon the wounded part, keeping the wound open as much as possible; the next day he repeats the unction on all the bitten member, and purges the patient with a dram of his mercurial pills; the third day

* DU CHOISEL's method of treating persons bit by mad animals, p. 17.

he rubs the ointment only over the bitten part, he gives a small mercurial bolus, or the fourth part of the mercurial pills above mentioned. Thus he continues for ten days to rub in a dram of the ointment every morning, and to give the laxative bolus, which commonly procures the patient two or three stools, and hinders the mercury from affecting the upper parts. At the end of ten days, he purges again, with the same pills, and dismisses the patient.

The mercurial pills are composed of

Three drams of crude mercury, extinguished in one dram of turpentine; of the best rhubarb, colloquintida in powder, and gutta gamba, of each two drams. The whole to be made up, with a sufficient quantity of clarified honey. The dose one dram.

This method is only adapted to such persons who apply to Mr. DU CHOISEL, immediately after being bitten. After two or three weeks, the disease having taken a deeper root, Mr. DU CHOISEL increases the dose of the medicines, and continues them for a longer time. The dose is also proportioned to the age and constitution of children, a small quantity of the ointment is rubbed in for fifteen days, and he purges them, once in three days, with syrup of  As to regimen, Mr. DU CHOR  ients the use of

of things tart or acid, of all crude meats, and such as are hard to digest.

Thus it is obvious, from Mr. DU CHOISEL's account, that crude *mercury* expels the poisonous *saliva* through the salival glands; and that, to prevent an obstruction in those glands, it is necessary, in the *East Indies*, to purge with the above mentioned pills. But what gives the greatest satisfaction, is the case he relates *, of a woman who had the *hydrophobia*, and was cured by rubbing in three drams of the mercurial ointment, at a time, and so repeated, night and morning, till a plentiful salivation came on; which relieved her head, removed the *hydrophobia*, and cured her entirely; the salivation being carried off by a *dysenteric* purging, which was also remedied by means of a laxative electary, with *rhubarb*, taken in the morning, and a dose of *diascordium* at night.

This serves to prove the efficacy of *mercury* in this disease, as well as in the *lues venerea*. And certainly *mercury* in a crude state, purified, and cleansed, has this peculiar advantage attending it, well known to those who administer it frequently, that it neither irritates, nor is so uncertain in it's operation, as most mercurial preparations are; for which reason it is safely applied externally, and may

* P. 25, 26.

be given internally, in a state of inflammation, in this disease, as well as in the venereal one. Experience demonstrates the success of crude *mercury*, in Monsieur DU CHOISEL's curing above 300 patients, from the year 1749 to 1753.

In *Asia*, and *Europe*, mercurials have been given internally, to prevent the bad effects arising from the bite of a mad dog; and I should have mentioned them, according to the time of their being introduced into practice, before Messieurs DOUGLAS and DU CHOISEL's methods, had not these two practitioners followed the same intentions with Doctor DESAULT; and therefore it was proper to place them in that order.

In *Asia*, where the heat of the climate produces a profuse perspiration, and the inhabitants require a supply of animal particles, and of spirituous liquors, the *Chinese* make use of the following medicine; which, from it's great success, was brought over to *England* by SIR GEORGE COBB, and Lady FREDERICK, in hopes it might prove as effectual in *Europe*, as in the *East Indies*, for the cure of the distemper arising from the bite of a mad dog.

The prescription is as follows :

Take of native and factitious cinnabar, of each twenty-four grains : Let them be p
of musk, sixteen grains : and well mixed together.

As soon as possible, after the person is bitten, he is to take this powder in a glass or tea-cup full of *arrack*. If no symptom appears, this dose is thought to secure the patient, for thirty days; but if the least symptom is upon him, then the dose is to be repeated three hours after.

From the composition of factitious *cinnabar*, and the chymical analysis of native *cinnabar*, it appears, that they are both composed of *mercury*, and *sulphur*, the first in a proportion of above three to one, and the latter of six to one of *mercury* to the *sulphur*. The other ingredient *musk*, is an animal substance, which promotes a gentle sweat, without heating, raises the spirits, eases pain, and usually brings on a refreshing sleep. It is known to be an excellent antispasmodic; and Doctor WALL has recorded in the Philosophical Transactions *, its good effects in convulsive disorders, particularly in two persons attended with *subfultus tendinum*, extreme anxiety, and want of sleep, from the bite of a mad dog. Doctor HUXHAM says †, that *musk* has a great power of expelling the morbid humors through the pores of the skin, without heating too much. And Mr. PRINGLE ‡ has given sixteen grains of *musk*, with twenty-five grains of native *cinnabar*, and as many of *cinnabar*

* Philosophical Transactions, N^o 474.

† HUXHAM De aere & morbis, tom. ii. p. 125.

‡ Physical Essays, vol. ii. p. 252.

of *antimony*, in a glass of brandy, to a lady, in a bad fit of the gout. Doctor HILL, in his *Materia Medica**, also commends *musk* as a cordial and antihysterical.

This prescription, then, is not only of use to the *Chinese*, as a diaphoretic, antispasmodic, and antihysterical; but may be of great service, also, in *Europe*, especially among those who have no dislike to perfumes, or feed much upon animal food, and delight in spices, and high seasonings: but, notwithstanding I readily acknowledge the good effects of *musk*, in spasmodic, epileptic, and hysterical cases; yet I must fairly own, that, in putrid diseases, where the *crasis* of the blood has been broken, and the *vis vitæ* much impaired, *musk* has failed me, in such constitutions as have been accustomed to a vegetable diet, and very little animal food: and when neither the *musk julep*, nor *musk* in substance, would take place, the *camphorated julep*, with acids, has succeeded. This doth not quite invalidate the use of the *musk* and *cinnabar*, in the case of a bite from a mad dog; it may certainly succeed, even in our climate, as a preventive, but whenever the disease attains any degree of putridity, it will not be safe, entirely to rely upon it.

Doctor JAMES is the first practitioner, in *Europe*, who has advised a mercurial medicine to be taken internally

* HILL's *Materia*

cure of this terrible disease. It appears, from his publications, that, towards the end of the year 1731, the Doctor recommended the use of *turpetb mineral*, or *mercurius emeticus flavus*, with the same intentions as this medicine is given in the venereal distemper; and from the success of it in which, he most probably took the hint.

In a pamphlet, printed in 1741, he writes to professor BOERHAAVE, that the following prescription had, in *February* 1732, cured two foxhounds, actually mad, and to whom neither dipping in salt water, nor the *tin* medicines, had done any good. He gave from seven and twelve grains, to twenty-four, of the *turpetb mineral*, to one dog, who had a plentiful salivation, and recovered.

As a preservative, Doctor JAMES prescribed to persons bitten, as follows:

Take of turpetb mineral twelve grains, of compound powder of contrayerva one dram, of Venice treacle as much as is requisite to make three bolusses; one to be taken every night, with an antihysteric julep.

This method was attended with success in the cure of a young man of eighteen, another of seventeen, and a girl of fourteen years of age, who were all bitten by dogs who proved mad; but not one of those persons had the least sign of an *hydrophobia*, nor any other aggravating symptoms, than dejection, and tremors.

mors. It does not appear that any external application was made to them, although the Doctor in this pamphlet, and in the succeeding edition in 1743, directs the use of Doctor DESAULT's mercurial ointment, and also the *pulvis antilyssus*, and *cinnabarine* powder.

In autumn 1760, Doctor JAMES published a loose half-sheet, of *Instructions for preventing and curing of canine madness*; in which, having labored much to prove himself the first inventor of the mercurial method, at least taken internally, which there seems no reason to dispute, although Doctor JAMES owns that Doctor DESAULT was the first that made use of the mercurial ointment, as Mr. DOUGLAS informed him; the Doctor proceeds to recommend the rubbing in of a dram of a mercurial ointment every day, during a week, and even twice a day, without raising a salivation. He also advises the *turpeth mineral*, but in less quantities, and with a different intention. The prescription is altered thus:

Take of turpeth mineral from three to eight grains, according to the strength of the patient, and the degree of infection received; camphire an equal quantity, to be made with conserve of hips into a bole. To be taken three times, alternately, every other night.

Doctor JAMES's intentions plainly appear, first, by his direction of the *turpeth mineral*,

the *compound powder of contrayerva*, and the *Venice treacle*, to have vomited and promoted both the salivary and cuticular discharges; but finding the irritation of the mercurial vomit too great to allow of the other ingredients to operate, he changes his design, and mixes equal quantities of *turpeth mineral* and *camphor*, to promote perspiration, and hinder the *turpeth*, as he says, from vomiting; but the *nausea* caused frequently by the *camphor*, will, probably, disappoint the intended effect; especially when the stomach is in a state of irritation, from the vitiated *saliva* admitted into it: so that even this mixture, long since recommended by medical authors, to sheathe the acrid particles of mercurial preparations, and to promote their operation, as alterants and diaphoretics, in venereal cases, cannot be so well adapted, in the case of persons really bitten by mad dogs. The *turpeth mineral* can therefore only be given, with safety, at such an age, and in such constitutions as are of a relaxed texture, leucophlegmatic, or debilitated; in which, as in many venereal instances, the solids and fluids require a degree of irritation, to enable them to perform their functions and secretions: but where there is already a tension, which is likely to be increased, and produce spasms, a milder method of introducing mercury is to be pre-

preferred, which, even in the highest degree of inflammation, owing to an acrid venereal *virus*, is known to have had all the desired effect, without causing the least pain, heat, or sensible inconveniency. And this is the introduction of crude mercury into the blood, by means of a mercurial ointment.

In the consideration of the following cases I shall endeavor to make it appear what kind of treatment, and medicines, have proved chiefly beneficial.

SECTION

SECTION IV.

OBSERVATIONS.

CASE I.

A NARRATIVE of an uncommon CASE, which happened about 25 years ago, in the neighbourhood of Salisbury, from the bite of a mad dog. Communicated by Doctor HELE, physician at Salisbury.

A Young lady, about twenty years of age, and of a good healthy constitution, feeding her little favorite dog, at dinner, was bitten by the finger, so that it bled a little, on both sides, where his teeth had broke the skin; and she unfortunately sucked the blood, and spit it out. The dog had been sullen and sleepy all that day, and refused his victuals. The next day the gamekeeper, suspecting madness, confined him, and in two days he died.

The young lady, alarmed at this terrible accident, came the next day to me for advice. I ordered her to lose eight ounces of blood, from the arm, to take Doctor MEAD's *pulvis antilyssus* for six mornings, and, after that, to undergo the usual immersions in the sea, drinking

drinking half a pint of the same water, every morning, for a month. She observed the former part of these directions, and then repaired to *Southampton*, for the benefit of the sea water. The next day after her arrival, she was dipped; but being kept under water for some time, and then dipped again, and again, with very short intervals, she was so much frightened, that she could not be prevailed upon to bathe a second time, or so much as to drink the water; but she resided there the whole month (the time allotted for this course), and then returned to her friends, concealing from them the inexcusable omissions she had been guilty of: and they had not the least distrust but she had regularly conformed to the whole course prescribed.

She continued quite well, for five months, and about the expiration of that time she was seized suddenly with a chill, soon after she had sat down to make tea for the company who had dined there that day; and this little *rigor* was immediately succeeded by so total a *syncope*, that she fell from her chair, and remained speechless and senseless on the floor, for some minutes. She was carried up stairs, and soon put to bed, and some time after, she grew warm, and she had reachings to vomit. She took two ounces of *ipecacuanba* wine, with half a dram of *spir. lavendul. comp.* which had good effect, by relieving the great load and oppression on the stomach, and promoting a per-

perspiration, which kept her easy a good part of the following night : but in the morning I found her low, hot, and restless, with a quick weak pulse, and complaining of great weight, and uneasiness about the *præcordia*, with a *subfultus tendinum*, and frequent twitchings, and startings. Blisters were immediately applied to the back and arms, and sinapisms to the feet, and the diaphoretic medicines exhibited as usual in such cases. Every thing went on much the same that night ; and finding the patient not at all relieved the next morning, but growing rather *comatose* and delirious, with the same low quick pulse, I ordered blisters to be applied to the head and thighs. The next morning I found her relieved of the *coma*, and *delirium*, but the *subfultus tendinum*, and convulsive twitchings, much the same ; and the nurse told me, that she often, in the night, called for liquor, but could not drink it when brought to her. I never had, till then, the least thought of the bite of the mad dog ; but now, being apprehensive that this symptom was somewhat of the *hydrophobous* kind, I asked her whether she would drink a draught of any of the liquors appointed for her common drink. She expressed great desire of drinking, but said, the liquors offered her by the nurse went against her stomach. I asked her what she herself would chuse to drink. She thought, that if she could be indulged with some *Rhenish* wine and water, it would
be

be the most agreeable draught she ever had in her life. Both were soon brought, and I myself mixed them, by the bed-side, that she might not suspect that we had, in any shape, deceived her. She caught at the glass, with great eagerness, but the moment it touched her lips, she pushed it from her, and, as I pressed it to her mouth, with some little force, she as strenuously pushed it away, and, with a small struggle, fell into a strong convulsion, which lasted some time, and seemed to be attended with the same sort of fulness of the throat, and strangulation, as frequently accompany hysteric disorders. I then pronounced the whole illness to be the effect of the dog's bite, and that this aversion to drinking was the worst symptom that could befall us. I ordered her a bolus with *cinnabar. antimon. pulv. ad guttetam*, aa ʒj, to be given every six hours, which she swallowed tolerably well, but not a drop of liquid could be got into the mouth, even by force, without causing a return of the convulsive fits. The next morning, I ordered a blister to be applied all round the neck, as broad as her neck (which was naturally pretty long) would admit of, and the bolus to be repeated as before. The next day she would take down a little quantity of warmed liquid at a time, though it often seemed to put her into great agonies. After this manner, in short, we kept on, with the addition of five grains of *sal. volatil. ammoniac.* to each bolus ;

the

the exhibition of glysters occasionally, and such other few discretionary alterations or additions, for ten days longer; when, after a gentle *diaphoresis*, for almost three days and three nights, the fever, and every concomitant bad symptom, entirely left her, and she got strength apace, slept sound and quiet sleeps at night, sat up for several hours at a time every day, and conversed very agreeably and sedately with any of the family who visited her.

Thus she went on for a fortnight, or longer, and then, one morning, after she had been up about an hour, and was talking, in a pleasant manner, with a young lady of her intimate acquaintance, she fell into a phrenzy, and, in less than an hour, seemed quite a maniac.

The pulse was very quick, and, though not full, yet she was blooded by force, a glyster given, and a large blister applied to the back part of the head, and all this time she attempted to bite every body that came near her, which she was never once inclined to do, in all her former fever. In this raving condition she continued for thirty hours, when she fell asleep, with the great fatigue, soon got into a profuse sweat, and became quite sensible again.

It is to be observed, that this paroxysm of phrenzy began about twenty-four hours before the new moon; and although it left her in the manner above mentioned, and she continued, apparently, as well as ever she was in her

her life, for the space of three weeks, and upwards; yet, about thirty hours before the next new moon, the fever and phrenzy returned, with the same violence as before, but continued not above twelve hours, when it went off with the usual sleep, and sweat: and thus, for the space of five months longer, we had the raving paroxysms, and clear intermissions, more or less, about the time of the new moon: but every month the raving fits shortened, and the last of all held not above half an hour; when she voluntarily threw herself on the bed, and slept and sweat as before.

During the whole time, the large blister on the *occiput* was kept open, the *cinnabar* bolus given twice in twenty-four hours, and gentle cordial purgatives were administered, as occasion required. The *catamenia* were regular, before, at, and after the whole course of the disorder. She pursued the same method for some months longer, the blister still kept open the whole time, as large as all the hinder part of the head would admit, and she had never afterwards the least symptom of any relapse, though she married about a year after, and had several children, and died about nine years after her recovery.

It is further to be observed, in the first place, That even the small preventive course she followed, may have protracted the appearance of any bad symptom for some months, and might likewise be the principal cause of their remarkable

able deviation from the common course of such fevers, when they did come on.

Secondly, I think it is to be considered, how far the blister, round the neck, might alter the quality of the *saliva*, remove that resemblance of a *hydrophobia*, and avail in restoring a power of deglutition, though with some difficulty.

And, Thirdly, I would beg leave to mention the power and efficacy, I have frequently experienced, of *cinnabarine* medicines (without *musk*), but joined with *pulvis ad guttetam*, in convulsions of almost all kinds, either with or without fever; and that, whenever I have added the *valerian* root, instead of the *pulvis ad guttetam*, it has generally stimulated too much, and increased, rather than diminished, the convulsive symptoms.

November 14,

1760.

H. HELL.

REMARKS.

This case is the strongest proof of the validity of Doctor MEAD's opinion, in favor of a nervous fluid, and of this fluid being particularly affected by the vitiated *saliva* of the mad dog: for it seems, without any previous or immediate effect on any of the blood-vessels, or on any of the tendons, or large nerves, to have been absorbed by the lymphatic vessels,
and

and to have circulated through the whole mass of fluids.

The bleeding, and diuretic *pulvis antilyssus*, may, as Doctor HELE observes, have delayed the fatal effects some months; but the single immersion in sea water was of no advantage; since it only served to terrify the young lady to that degree, that she could not bear the thoughts of repeating the bathing.

No pain in the finger which had been bitten, and healed, without any particular care, in two or three days; no pricking, shooting, or darting pain up the arm, came on, to shew any particular irritation of the nerves externally. But at the end of five months, when near the full moon, a sudden chillness and *syncope* seized her, followed by reachings to vomit, oppression of the *præcordia*, attended with anxiety, a quick pulse, *subsultus tendinum*, and frequent catchings. Can it be doubted, that the nervous fluid and the whole mass of blood were wholly affected, and that this was an effort of nature to expel the poison? Nay, more; if it be considered, that, three days after, the *hydrophobia*, and *nausea* at the stomach, came on: is not this the critical discharge by which the acrimonious salts of the *saliva* were to be thrown off? and did not the blister, applied round the neck, and continued a long while open, serve to draw off, as in the *angina*, part of the humor from the salival glands, and, of course, lessen the degree of irritation

all along the *œsophagus*, which caused the *hydrophobia*?

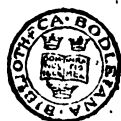
Ten days after this seizure, a *diaphoresis* broke out, which lasted three days, and three nights; and this sweating carried off the fever, and other symptoms. The *cinnabar* and *pulvis ad guttēlam*, with the addition of *sal. ammoniacum*, produced this effect in the blood, and no extraordinary motion was found in it; during a fortnight after, her mind recovering also its serenity and chearfulness.—But, about twenty-four hours before the next ~~new~~ moon, suddenly a phrenzy comes on, and the young lady becomes a perfect *maniac*, in less than an hour. She is furious, endeavors to bite, and, by means of a profuse sweat, she recovers her senses. The symptoms return about thirty hours before the next ~~new~~ moon, last not so long a while, but every month, repeatedly five times, Doctor HELE saw them, and conquered them, at last, by a perseverance in the use of the *cinnabar* powder, and keeping a blister perpetually open on the back of the head.

Can there be stronger proofs of a nervous fluid particularly affected in this stage of the disease? Does not the power of the moon shew itself in those periodical returns? Does the least sign of inflammation now appear by the blood, and is it not owing to the seasonable evacuations, and, indeed, to Doctor HELE's whole prudent directions? Does not this
young

young lady's case set Doctor MEAD's opinion beyond all dispute?

I cannot pass over one very necessary observation; that, in the whole course of this disorder, the *menses* appeared regularly: therefore the blood had, all along, a due fluidity, agreeable to what professor BOERHAAVE, and other authors, have observed*.

CASE H.



THE CASE of ELIZABETH BRYANT, published by Doctor NUGENT, deserves notice: and I have extracted it from the Doctor's Essay, in order to make some remarks upon it.

ELIZABETH BRYANT, twenty-two years of age, healthy, and of a good habit of body, chiefly sanguine, and phlegmatic, was, on the 23d of June, 1757, bit, by a mad turnspit dog, on the third finger of her right hand, which bled some few drops; and on the back of the hand, the skin of which was pinched through, but did not bleed. The sores healed soon, without any particular application; the dog died the next day. Upon her being restless and fretful, Mr. WRIGHT, a surgeon of reputation, ordered her to the sea, where she was dipped, till she could bear it no longer.

* Croorem valde liquidum, & vix in aëre concrefcen-
tem. BOERHAAVE Aphorism. 1140.

On her return he bled her in the arm, and gave her four doses of DOCTOR MEAD'S *pulvis antilyssus*. On the 20th of *July* she was put into the cold bath, which treatment was repeated four mornings successively; then, upon complaining of a numbness and pain in the arm and shoulder of the hand that was bitten, SIR GEORGE COBB'S medicine, of *cinnabar* and *musk*, was given. She thought her spirits greatly relieved, and said she was very well. The appearance of the *catamenia* prevented her using the cold bath next day. On the 27th of *July*, in the morning, about five hours before the full moon, she was, *all at once*, seized with a pain in the middle finger, and at the back of the hand, where she had been bitten, darting up her arm and shoulder, across her throat, and then she was afraid of being choaked; and used to lay hold of her throat as if to prevent it's closing up; could not bear the sight of water, nor hear even the noise of falling water, which, as also the barking and howling of dogs, brought on the pain to an intolerable degree, attended with a *suffocation*, *short breathing*, *dizziness*, *risings at her stomach*, *breast*, and *throat*, and strong *catchings*, as if she was going into convulsions. In this state DOCTOR NUGENT visited her; and, by presenting a basin of water, was confirmed that ELIZABETH BRYANT was seized with an *hydrophobia*. She had immediately fifteen ounces of blood drawn, and a paper

paper of the *cinnabarine* powder was ordered to be taken every three hours, in honey; a pill, of two grains of the *extractum thebaicum*, every three hours, with the powders, till rest could be procured; and a plaister of *galbanum*, with half an ounce of the same *extractum thebaicum*, to be applied to the throat and neck. In the evening she was easier, and could recollect she had been blooded, and with great difficulty swallowed some broth. Her blood looked very well. The powders and *opium* pill were repeated every three hours, and the wounded arm rubbed with warm sallad oil, several times a day. The 28th of *July* she was bled again, to twenty ounces, and had a clyster of *antimonial* wine, the pills and powders repeated, and the sallad oil rubbed as before. She could swallow liquids better; was ordered ten grains of *turpetb mineral*, and another clyster. *Monday* morning, the 29th, she lost twelve ounces of blood, the powders continued, was directed to drink often of barley water with *nitre* and the *galbanum* plaister renewed. In the evening every way better, the pain in her arm and hand quite gone, but her fear of dogs and water remain. The *musk* and *cinnabar* to be taken as before, the oil to be rubbed in, and only two grains of the *extract* of *opium* to be given at night. *Tuesday*, 30th *July*, she was sick at her stomach, sweat much in the night, complained of pains, owing, it was thought, to cold contracted. The cly-

ster, the powders every six hours, and the sal-lad oil, were repeated. The *nitre* was omitted, and the *opium* quite laid aside. She sweat much this day, and drank plentifully of water-gruel and baum tea. The clyster worked well. *Wednesday* morning, 31st, the pains were gone. She had been sick at midnight, after which she had sweat profusely; all symptoms disappeared, except her dread of water and dogs. The *opium* plaister was removed, and the powders continued every six hours, but in the evening were only ordered night and morning. On *Thursday* the symptoms returned, but abated after her drinking tea. This night she was much frightened by dreams. On *Friday* morning a clyster was given; the dread of water was now quite over, only it made her giddy. *Sunday* she mended in appetite, strength, and spirits, and continued so till the 16th of *August*, when the young woman, through the folly or wickedness of a man and woman, was thrown into the greatest terrors. An opiate was given that night, and the *cinnabar* powders were directed in *elder flower* tea. She was vomited with *ipccacuanba* wine, bled to about twelve ounces, and took saline draughts with bitter and antihysterical medicines. Doctor NUGENT judging the case to be now hysterical, directed the following powder, which Doctor HALLET, of *Exeter*, had used with great success.

R. A.

of a Mad Dog. 193

℞ *As. fetid.* gr. xij. *mosch.* gr. x. *camphor.*
gr. vj. m. f. *pulvis.*

This was given in the afternoon in a bolus, and repeated at bed-time, with the saline draughts between whiles. The next day, after sweating considerably, and sleeping well, she was much mended, in all respects. Two saline draughts were ordered for the day, and the *fetid* bolus at night; and on the 4th of *September* she was so well, as to require no more medicines, and has remained well ever since.

REMARKS.

This Case of ELIZABETH BRYANT plainly shews how greatly both the body and mind are affected by this terrifying accident of the bite of a mad dog. From the account, and Doctor NUGENT's very ingenious and just observations, it is evident, this young woman was bitten by a dog in whom the heat of the weather in the month of *June*, the situation the animal was placed in, frequently as a turnspit, and perhaps the want of water, had raised a fever, and, as is common, a *delirium* ensued; in which fit he bit ELIZABETH BRYANT: but she was not apprized of his madness, till, having offered him some minced meat, he could not swallow it, frothed much at the mouth, and flavered. His dying the next day,

day, without violence, and a dog being killed raving mad, three weeks after, who had eaten the meat refused and flavered on by the other; put it out of doubt, that the acute fever, raised in the turnspit dog, had sufficiently produced, before his death, that degree of acrimony in his *saliva*, as strongly to affect not only the other dog, but ELIZABETH BRYANT also.

From the assurances given her, by a neighbour, that the dog did not die mad, but choaked by something sticking in his throat, she seems to have had no further anxiety, till about three weeks after; when, probably, the madness of the other dog brought the accident fresh again into her mind. She then becomes of an unsettled temper, restless, and fearful of dogs and water. Mr. WRIGHT attempts the usual preventive cure, and, finding no effect from the sea-water bath, which she could bear no longer, he bled her, gave DOCTOR MEAD'S *pulvis antilyssus*, and put her into the cold bath, which was left off on the appearance of the *menfes*.

This treatment, prudent and well intended, although it might protract the effects of the latent *virus*, yet it did not prevent it from shewing itself: first, by the appearance of two pimples, with white heads, on the back of the hand; and after, by a numbness and pain in the arm, hand, and shoulder, of the bitten arm. Upon this, the *cinnabar* and *musk* medicine being administered, she found relief
from

from her pains, and her spirits were raised, for a while; but, five hours before the full moon, the pains from the bitten parts shoot regularly up the arm to her throat, and, as these advance, the terrors of her mind increase. Doctor NUGENT, in these circumstances, orders the young woman to be blooded; and, being chiefly of a sanguine constitution, the bleedings are repeated, during the course of the illness, till she had lost near sixty ounces of blood: and if these evacuations, together with the regular course of the *menfes*, be attended to, there seems the same event to have followed, as in the person from whom Doctors HARTLEY and SANDYS drew 120 ounces*. The *cinnabar* medicine and *opium* are then directed, to promote sweat, assuage the pains, and relax the nervous system so as to remove the spasms, and the irritation which caused them; and also to quiet the mind, by procuring sleep.

Doctor NUGENT was so desirous of avoiding all kind of irritation, that he rejoices at his omission of the *turpeth mineral* bolus which he had prescribed; and even declares†, as a caution to others, that he should not have directed *antimonial* clysters, on account of their irritation, had not the free use of *opium* made their stimulating quality, as he thought, necessary.

* Philosophical Transactions, N° 448.

† NUGENT's Essay on the *hydrophobia*, p. 99, 100.

The Doctor tried to preserve his patient from too great a heat and inflammation, by the use of *nitre*, but this salt proved nau-
seous; and therefore he contented himself with diluting, by means of *water gruel* and *baum tea*. His directions proved successful; but the mind, like the body, remained weakened, and liable to a relapse upon the first surprise. The inadvertence or mischievous design of the persons who affrighted her, threw her into all the former terrors, and she felt, as she thought, the same pains; but a vomit seasonably given that night, to remove a loathing and sickness at the stomach; her being blood-
ed two days after, and the course of antihy-
stERIC medicines, restored that due state of the solids and fluids which constitutes health; and, no doubt, proper encouragement, and comfort, also recovered her mind to it's former cheerfulness and tranquillity.

Upon the whole, ELIZABETH BRYANT'S case appears to be an acute, not a putrid one; and the necessary evacuations, together with her fright, may have produced the high degree of *hysterics* which followed.

C A S E III, IV, and V.

THE 29th. *December*, 1751, Mr. JOHN MEHEW, a farmer of *Godmanchester* in the county of *Huntingdon*, having been absent from home a few days, returned in the evening, and was informed that his yard dog was run mad, and had bitten eight cows, most of them with calf, and two sows with pig; all which refused to eat or drink, and died mad. The cows had the *pewter medicine* given them, by way of drench, several times, but without success.

This evening, *December* the 29th, one of the cows, being thought bitten, had been loosened, they having been all tied up, soon after they were bitten. She was no sooner at liberty, than she ran furiously up and down the yard, endeavoring to do all the mischief possible, but was secured by JOHN JONES, the man servant, whom the cow bit in the fore finger, which was much torn. The same evening Mr. MEHEW going to assist in giving the same cow the drench of the *pewter medicine*, she bit him on the back of the left hand, and tore it much. The cow would not admit of the least drop of the drench, and flattered a great quantity into the bowl, in which, not knowing what had happened, Mrs. MEHEW dipped her fingers, and tasted the

the liquor, to feel if it were not too hot. Being told the cow had flavered in it, she was much terrified.

Upon being sent for, I met the late Mr. HENRY HAWKINS, surgeon and apothecary at *Huntingdon*, who dressed Mr. MEHEW's and JOHN JONES's wounds in the following manner. First, the wounds were cleared from the *saliva* with dry soft lint, then they were dilated, and suffered to bleed, the blood being washed off with warm milk and water, and the wounds dried, they were dressed with pledgits of lint dipped in warm *oil of turpentine*, over which, cataplasms of bread and milk, with *Venice treacle*, were applied. Mr. MEHEW, and his servant JOHN JONES, were then blooded plentifully, and at night they and Mrs. MEHEW were vomited with *vinum ipecacuanbæ* and *oxymel scilliticum*: after the operation, a cordial draught was given to each of them. The next morning they took Doctor MEAD's *pulvis antilyssus* in warm cow's milk. Mr. MEHEW's hand, and JOHN JONES's finger, were dressed with pledgits spread with *unguentum e gummi elemi*, after rubbing on the lips of the wounds, and over the back of Mr. MEHEW's hand, and JOHN JONES's finger, about one dram of the *unguentum cæruleum fortius*.

I directed them to take, each of them, two ounces of Doctor FULLER's *decoctum antilyssum*, in the afternoon at five o'clock. The
next

next day Mr. MEHEW and JOHN JONES were dressed with the same ointments, adding only to the *unguentum e gummi elemi* some *mercurius præcipitatus ruber*, to keep the wounds open, and discharging. The *pulvis antilyssus* and *decoctum antilyssum* were continued eight days, after which, the *Chinese cinnabar* medicine was directed, with this difference, that Mrs. MEHEW took the powder with a julep made up with *pennyroyal* water, *rue* water, tincture of *castor*, and of *valerian*, and syrup of *saffron*; and Mr. MEHEW and his servant JONES took it with a spoonful of *rum* and water.

By this method no bad symptom appeared, and the wounds were permitted to heal at the month's end, the mercurial ointment having always kept them free from inflammation. I advised the use of the cold bath; but, satisfied with their cure, they did not chuse to plunge into cold water in that sharp season of the year, in the midst of frost and snow; and have never felt any bad consequence, either from their bites, or apprehensions; being all alive, and in perfect health, at this time.

REMARKS.

That not only the dog was mad, but also the cattle whom he bit, is evident all dying furious. That Mr. servant JONES received the

blooded with the others; but, after the vomit, and during the course of the medicines, I directed the use of *antibysteric*, nervous, and cordial compositions, to be taken with those particular ones recommended for the distemper arising from the bite of the mad dog: and I all along, and ever since have, assured her, that I did not believe she was infected by the *cow's saliva*, nor would feel the least bad effect from it.

C A S E VI.

The Case of FRANCIS RAY, blacksmith, of Little Swaffham, in the county of Cambridge. Communicated by CHARLES ALLIX, Esq.

ON Tuesday the 19th of November, 1754, one RAY, a poor man, of *Little Swaffham*, applied to Mr. ALLIX, begging some sea water for the use of his son, 22 years of age; who, being at work with a blacksmith at *Cambridge*, was there bitten by a mad dog, three weeks before. The wound, between the fore finger and thumb, being only skin deep, and not in the least painful, the young man gave no attention to it, till, at the new moon, on the 14th of *November*, his hand began to swell, and be painful, and continued daily increasing till the 18th, when he went home to his father's.

Mr. AL-

Mr. ALLIX, not expecting any benefit from his sea water, which was grown stale, sent the young man two doses of Doctor JAMES's fever powders, with directions to take one as soon as the sea water had done working, and the other at night. Soon after, Mr. ALLIX, recollecting he had Doctor JAMES's pamphlet, which related, in a letter to professor BOERHAAVE, the effects of mercurials, in such cases; he set out, at two o'clock in the afternoon, for *Cambridge*, to have the medicines prepared.

In his way, Mr. ALLIX called on the young man, and looked at the wound, which was not open, but much inflamed, and round it a circular swelling. He complained of great pain in the wound, darting up the arm; had convulsive catches in his limbs, and his eyes looked very wild, and staring. He felt great anxiety in his sleep, and had been very feverish.

The sea water came partly off his stomach quite clear, the remainder purged him. Doctor JAMES's powder also vomited and purged him. It brought off a great deal of green stinking bile, after which the fever was much abated.

Between seven and eight in the evening, Mr. ALLIX called at *Little Swaffham*, on his return from *Cambridge*, when the swelling was increased, the inflammation more intense, extending itself quite up the wrist, and part
of

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of his fore arm ; and complained that the pain, which grew more violent, now shot to his heart.

The part was immediately rubbed with half a dram of the mercurial ointment. The second dose of Doctor JAMES's powder having been just given, although forbidden by Mr. ALLIX; he could not give the poor man the *turpetis mineral* bolus.

The fever powder having operated in a milder manner than the former dose, the young man fell into a breathing sweat, and quiet sleep, which held him the whole night: next morning, *Wednesday* the 20th *November*, Mr. ALLIX found the swelling greatly abated, and the man's looks more composed. He then took one of the following bolusses:

℞ Turpetb. mineral. gr. xij. pulv. contra-
yerv. comp. ʒj. tberiac. andromach. q. s. m. f.
bol. iij.

It worked him violently, upwards and downwards: in the afternoon he took one of Doctor MEAD's powders (a dram and a half of the *pulvis antihysus*) The wound and hand were anointed, and directions were given to repeat the rubbing in of the ointment, morning and evening.

Thursday, 21st, the swelling, and inflammation, were almost gone. A second *turpeth* bolus was taken, which wrought very briskly; and

and Doctor MEAD's powder was given in the afternoon.

Friday, the 22d, he complained, at times, of the pains returning, which alarmed him much. He took a *turpeth* bolus in the morning, and repeated the ointment both in the morning and evening, which he was directed to apply, as often as the pain and inflammation were inclined to return.

Saturday, 23d, the swelling and inflammation were not to be seen, his mouth began to be sore, and he spit much. Mr. ALLIX desired he would take another *turpeth* bolus that evening, and the two remaining doses of the *pulvis antihysus* at proper intervals, lessening the quantity of the ointment to be rubbed in, by degrees. Mr. ALLIX, going out of the country for a few days, left orders with RAY's father, in case a salivation should come on, or the pain and inflammation return, to apply to Mr. JENNINGS, apothecary in *Cambridge*.

Wednesday, the 27th, Mr. ALLIX returned to *Swaffham*, and called on the poor man, whom he found free from complaints, only weakened by the regimen he had followed. In this gentleman's absence, the family had been alarmed at a trifling return of the pain and inflammation. Mr. JENNINGS had been sent for, and only ordered an electary with *valerian*, in addition to what was before directed.

The

The swelling and inflammation being now entirely gone, Mr. ALLIX desired the man to use the mercurial ointment very sparingly, and leave it off by degrees; and recommended, as soon as possible, the use of the cold bath. About the 10th of *December*, the young man, and his father, called upon Mr. ALLIX, to thank him for his charitable assistance, and to let him know that young RAY was quite well, and returning to work.

Mr. ALLIX farther observes, that, notwithstanding the visible effects of the mercurial ointment, in removing the pain and inflammation on the first application, and abating the violence of the symptoms, before even the first *turpeth* bolus was taken; they, more than once, seemed inclined to return, but were removed again by a fresh application of the ointment.

The diet was chicken, or other fresh white meat, and a glass or two of Madeira wine made into negus, to keep up his spirits.

REMARKS.

This Case affords evident proofs of the effects arising from the putrid *saliva* of a mad dog, in autumn; the progress is also plainly to be traced: and had not Mr. ALLIX's kind assistance been applied in the very critical moment, there is no doubt but the severest symp-

tooms had soon followed, and the patient had lost his life.

It is to be observed, that the sea water, although stale, diluted the green tenacious bile, and carried part of it downwards. Doctor JAMES'S powders served as vomits, which cleared the stomach from the vitiated putrid bile, and took off so much of the irritation as to permit the *turpeth* bolus to be given without increasing the inflammation. But before the first *turpeth* bolus was taken, the young man's fever and swelling had abated; he had fallen into a breathing sweat, and slept quietly the whole night, after the first mercurial unction on the *Tuesday* evening. On *Wednesday* morning the patient's looks were composed; and then he took the first *turpeth* bolus; and on *Thursday* the swelling and inflammation were almost gone before the second *turpeth* bolus was taken. On *Saturday* the young man's mouth became sore, and he spit much; notwithstanding which, Mr. ALLIX directed the third *turpeth* bolus to be given, and the remaining two doses of the *pulvis antilyssus*; so that the salivary and urinary discharges were encouraged to the utmost: but, for fear of increasing the salivation too much, the ointment was ordered to be then rubbed sparingly.

In Mr. ALLIX'S absence, Mr. JENNINGS, his apothecary, only gave the patient an electary

electary chiefly composed of *valerian*, on account of his low and weak state after the spitting.—And on the 10th of *December*, that is, at the end of three weeks, the young man was perfectly cured.

If any farther proof be necessary, of the mercurial ointment having effected this cure; Mr. ALLIX has added a very strong testimony, by saying, that the symptoms were, more than once, inclined to return, but were as often removed by the application of the mercurial ointment.

C A S E VII.

IN *March*, 1759, Mr. LEWIS ALSOP, a butcher, aged about thirty years, of a robust make, but phlegmatic constitution, had the calf of his leg much tore by the bite of a mad dog. He went down, immediately, to *Lynn* in *Norfolk*, where he bathed in the sea. His wound healed without difficulty. About the end of *March*, 1760, having opened shop at *Witton*, in the county of *Huntingdon*, he complained, to several of his customers, that the calf of his leg was very painful, particularly at the change and full of the moon, at which time he always appeared much dejected.

Being consulted, I advised him to rub all over the calf of the leg, but more particularly over the wound, a dram of the un-

guentum caeruleum fortius, morning and evening, during a week, and every fourth day to take a purge of *manna*, and of the *bitter purging salts*. This method having succeeded, I recommended the repetition of it three days before every new and full moon, and as long after, during three months, taking care to purge, to prevent a salivation; which injunction he carefully followed, in the months of *May*, *June*, and *July*, following. In *October* Mr. ALSOP came to me, ill of an intermitting fever, for which I directed a vomit, and the *Peruvian bark*, whereby it was soon cured.

In *December* 1760, he called upon me, to thank me for all my care; and told me, he had been free from pain, or any complaint in his leg, some months, and so he continued to his death, which, as I am informed by Mr. HUNT, his apothecary, assistant to SIR THOMAS MACKWORTH, was occasioned by a putrid fever, which he contracted from a neighbour, whom he visited in his last moments, and of which fever he also died, on the fifteenth day, *March* 7, 1761.

REMARKS.

From the periodical returns of the pain in the part which had been wounded, it appears, that the bathing in the sea had not carried off the *virus*; but that it remained in the blood.

blood. The cessation of the pain, after the first mercurial unction, shews the power that *mercury* has of driving the vitiated *saliva* out by some of the emunctories: and had not Mr. ALSOP been perfectly cured from the effects of the bite he received from the mad dog, it is more than probable, that, in his last illness, the symptoms, arising from the bite, would have appeared.

Upon the strictest inquiry, I do not find, that he had either the dread of water, or of dogs, or any conversation tending to express the remembrance of his former accident; but only the symptoms usually attending fevers of the kind which proved fatal to him.

CONCLUSION.

THE foregoing considerations afford the pleasing hopes, that this disease, hitherto so terrible, and aggravated by the apprehensions which attend it, may now become, like others, more certainly cured; and therefore much less dreaded than heretofore.

But, before I proceed to lay down the directions to be followed, taken from the observations I have related, it may not be amiss to inquire, Whether the general alarm, spread all over the cities of *London* and *Westminster*, and parts adjacent, in 1760, and also in several other parts of *England*, was occasioned by any real cause, which infected dogs, and produced that madness? or whether it was merely a panic which had seized the inhabitants of those places?

The winter of the year 1759 had been very mild, and open; the spring of 1760 very forward: scarce any snow, or frost, had appeared in those seasons; and, during the whole summer, myriads of insects were seen in every leaf, upon the trees; and the springs, remarkably low, were full of them; more particularly the ditches, and pools of stagnating waters, of which the cattle were frequently obliged to drink, through the scarcity of water: and

and even the inhabitants of several villages had no other supply. Hence arose, in the autumn, especially among the poorer sort of people, putrid fevers, of such a malignant nature, as to be little inferior to pestilential distempers. Persons, in all appearance, in strength, and vigor of health, were carried off, in three, five, seven, or nine days, with the most violent marks of malignity and putrefaction. All had *petechiæ*; and none escaped without critical abscesses of the *axillary*, *inguinal*, and sometimes of the *parotid* glands.

No wonder, then, that the brute creation were also liable to such illness as corrupted waters could bring on; and especially if their food was equally corrupt, which dogs are known to feed upon of choice. The offals, usually cast about the shambles in every great town; the stinking waters contained in some marshy grounds; and, perhaps, even the want of water, in many places, might cause this madness among the dogs.

It first appeared in the borough of *Southwark*; and the consternation diffused itself all over the cities of *London* and *Westminster*. The magistrates immediately issued out a very prudent and judicious order, for every person, who kept dogs, to confine them, during a month, within doors; and ordered their bea- dles, and other officers, to destroy all dogs found at large; with a reward of two shillings for each dog which should be killed.

But

But as the wisest and most judicious intentions are frequently perverted, and the most beneficial regulations prove oppressive, through an abuse of power; so this reward prompted a licentious rabble to kill every dog they could meet, within their reach, with all the barbarity possible: and too often the number of real mad dogs was increased, by the violent pursuits and attacks of the giddy and unthinking populace. Therefore it must appear very plain, that, as there was sufficient cause, in that hot season, to produce the putrid fever, and madness, among dogs; so their number was multiplied, by the barbarous usage they met with; and even all these added, fell far short, in number, to those who were killed through wantonness, and without reason.

The fatal persuasion, that there was no cure for the disease incident to mankind from the bite of a mad dog, may have justified the consternation which was so general in the metropolis: but now, that, in many parts of the world, successful cures have shewn this malady not to be incurable, there can be no longer any plea for that extreme anxiety and fear.

There is but one general rule to be observed in the treatment of this disorder, that is, the application of the *mercurial ointment*, which can never be safely dispensed with: all other rules, of evacuations, external applications, or internal medicines, must be varied, according to the stage of the disease, the age, and con-

constitution, of the patient. However, for the direction of such who may not be at hand to have assistance, the following particulars are mentioned.

The part bitten should immediately be cleaned from the *saliva* of the mad dog, and the wounds encouraged to bleed, carefully clearing the blood away; then half a dram of the *mercurial ointment*, known by the name of *unguentum cæruleum fortius*, or the *stronger blue ointment*, should be rubbed in, and repeated night and morning, increasing or lessening the quantity, as it may prove necessary. Sanguine constitutions will require bleeding; leucophlegmatic, relaxed, and bilious ones, should be vomited, either with *ipecacuanba* wine, with or without *oxymel of squills*, which will cleanse the stomach and bowels from the putrid bile, and acrid *saliva*, that has been discharged into them; and in the advanced stage, when liquids begin to pass with difficulty, if it be requisite to empty the stomach and bowels, after plentiful bleedings, some grains of *ipecacuanba* and *white hellebore root* may be given in a bolus, made up with the *oxymel of squills*. These vomits will be less apt to irritate the *primæ viæ*, than either *turpeth mineral*, or any *antimonial* preparation.

DoCTOR MEAD'S *pulvis antilyssus* may then be taken every morning, in warm milk, to procure the urinary discharges, while the *mercurial* frictions are continued; and if these are inclined

inclined to salivate, an emollient clyster; or a purge, with *manna*, *cooling salts*, and *rhubarb*, may be given. *Rhubarb*, either in powder, or the syrup, will be best adapted to children. Clysters are recommended, in all stages, by Doctor DESAULT, professor BOERHAAVE, and Doctor MEAD; and are to be composed of such ingredients as the case may require, whether emollient, or coolers. After the mercurial ointment has been used four or five days, and the patient purged with some of the abovementioned medicines, or, if necessary, with *crude mercury*, divided with *turpentine*, and mixed with *rhubarb*, or by *mercurius dulcis*, well sublimed, and mixed with *rhubarb*; then it may be proper, in some cases, especially where the spasms are frequent, to give the *cinnabars*, either with or without *musk*, as perfumes agree or disagree with the patient: indeed there are instances wherein *musk* has not been disagreeable to the stomach, although the person could not usually bear the smell of it. The *cinnabar* powders are to be taken every six or eight hours, with a julep of *rose water*, *pennyroyal water*, *tincture of castor*, and some common syrup, or in a glass of *arrack* alone, or with water.

In tender constitutions, antispasmodic and antihysterical medicines may be used, towards the end of the cure; but nature, in this disease, no more than in any acute disorder, is not to be overcharged with medicines: for,

as Doctor MORTON observes *, “ an officious
“ overloading seldom goes off unpunished.”
And care must be taken, lest, instead of
strengthening the nerves, they suffer not by
too much irritation.

Such patients as can, without fear, be pre-
vailed upon to go into the cold bath, willingly
and of themselves, may complete their cure
by that immersion; but force, or too earnest
persuasion, are cautiously to be avoided.

The diet to be kept, during the mercurial
frictions, which, as hath been said, are to be
repeated according to the case, and intirely de-
pended upon, is to be light and nourishing,
neither high seasoned, nor acrid: in the worst
stages, a moderate quantity of wine may in-
crease the inflammation; whereas wine may
be of use in the beginning, and in a dejected
state. White meats will suit the stomach
best; and milk pottage, water gruel, *polenta*,
that is, a decoction of *oatbread* toasted, and
toast and water, may be drank: as likewise an
infusion of *black currants* stalks and leaves, or
baum tea sweetned with *black currant* jelly:
these two last will better suit in the inflamma-
tory stage.

So far from confining the patients to their
room, or house; exercise, company, and di-
versions, are to be encouraged: for the mind

* *Natura non debet lacessi medicamentis. Quod fit
officose raro impunè patitur. RICHARDI MORTON
Exercitationes.*

being as much affected as the body, the cure will be much forwarded by a proper application to the passions, avoiding all conversation relating to madness, or mad dogs, Doctor DESAULT relates * the success which attended these directions which he gave to a lady of *Bordeaux*, who, under the course of mercurial frictions, constantly visited her friends, went to concerts, and other public places.

Thus far the cure is only preventive of the *hydrophobia*, and designed for the milder progress of the disease, and also when it is complicated with *hypochondriac* or *hysterical* symptoms; but in the confirmed state, when the *hydrophobia* appears, the actual cure is to be performed by copious and repeated bleedings, cooling clysters, often administered, of *barley-water*, *nitre*, *honey*, and *vinegar*; and, after these evacuations, it may be allowable, in case of a considerable flow of the *saliva*, to apply a blister round the neck, to take off part of the discharge, as succeeded in Doctor HELE's remarkable observation: this is the only time wherein blisters can be safely applied.—But the medicine chiefly to be depended upon is the *mercurial ointment*, which is to be rubbed in three times a day, and continued till the symptoms decrease, and the discharge from the glands of the mouth

* DESAULT *Dissertation sur la rage*, p. 311.

shew it is proper to lessen the quantity of the ointment.

When the throat and stomach will admit of liquids, the same method, above mentioned, may be pursued, towards completing the cure.

F I N I S.

Published by the same AUTHOR.

I. AN ESSAY on the Contagious Distemper among the Horned Cattle.

II. A DISCOURSE on the Usefulness of Inoculating the Horned Cattle. Read before the *Royal Society*.

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1901.

Dr. LAYARD's
ACCOUNT
OF THE
SOMERSHAM WATER.

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C o u n t y o f H U N T I N G D O N.

*Da veniam scriptis, quorum non gloria nobis
Causa, sed utilitas officiumque fuit.*

OVID, EPIST.



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TO THE
NOBILITY, GENTRY, CLERGY,
AND
INHABITANTS
OF THE
County of HUNTINGDON,
THIS
ACCOUNT
OF THE
SOMERSHAM WATER,

With the Author's best Wishes
For their Welfare and Prosperity,
And his most grateful Thanks
For the repeated Favors
Received from them
During twelve Years happy Residence
At HUNTINGDON,

IS INSCRIBED,

By their Most Obedient, and
Most Obligated Humble Servant,
DANIEL PETER LAYARD.

SEVERAL persons being desirous of drinking the SOMERSHAM Water early in the season, and of having proper directions, the following account could not be so full as intended. The experiments to analyse the contents of the water, and the cases to prove its efficacy, are referred to a farther publication; as it would have been very ill-judged to have inserted herein the experiments which were communicated to Dr. HEBERDEN, and in his usual candid and obliging manner presented to the Royal Society, whose Committee have ordered them to be published in the next volume of the Philosophical Transactions.

Lower Brook-Street, May 19, 1767.



AN
ACCOUNT
OF THE
SOMERSHAM WATER.



THE County of *Huntingdon*, tho' one of the smallest, contains several springs of different kinds, some for common, and others for medicinal purposes. Mr. CAMDEN gives the earliest account of the Purgative Salt Waters, at *Hail-Weston*; and a later writer, the anonymous compiler of *Magna Britannia Antiqua & Nova*, published in 1720, mentions, that *St. Neot's*, and *St. Ives*, were famous for Medicinal Waters; but as no springs of such a nature

are found within the limits of those towns, they probably became noted by the residence of such persons who came to drink and use the purging *Hail-Weston* Waters, either internally or outwardly, which are situated at about one mile and a half from *St. Neot's*; or by the concourse of those who came to drink the Chalybeate Waters, on *Somerham Heath*, about the distance of two miles and a half from *St. Ives*. Mr. CAMDEN takes no notice of the pure and excellent water, known at *Huntingdon*, from its situation, by the name of the *Huntingdon Horse-Common Water*; of the pure limpid spring in *Holywell Church-yard*, much more famed in superstitious times for its great purity than any medicinal property; or of the Chalybeate Waters of *Nill-Well*, or *St. Agnes's-Well* in *Papworth St. Agnes*; at *Elton-Hall*, Lord CARYSFORT's seat, and other light Chalybeate springs rising in *Salme* wood, *Huntingdon* town, and many other places; nor did he probably know of a very strong briny spring in a close belonging to Sir ROBERT BERNARD, Bart. at *Bury near Ramsey*.

For Medicinal purposes, the waters chiefly to be recommended in this county, are the three following; 1. The pure and limpid water called the *Horse-Common Water*, at
Hun-

Huntingdon, remarkable for its softness and little sediment. 2. The Purgative and Alterative Waters at *Hail-Weston*, noted for there being three wells of different properties and uses very near each other. And 3. The Chalybeate SOMERSHAM Water. The first mentioned Springs at *Huntingdon* and *Hail-Weston* may hereafter be made known; but in these pages I confine myself to the account of the SOMERSHAM Water.

The SOMERSHAM Water, commonly called the SOMERSHAM SPA, issues forth from the declivity of a small hill, which is situated on a heath, bearing the same name, and lying near the high road, between the towns of *St. Ives* and SOMERSHAM, in the county of *Huntingdon*, about two miles and a half, or three miles distance from *St. Ives*. This heath was formerly cover'd by part of the royal forests, cut down in the reign of HENRY II. III. or of EDWARD I. and now serves only for the grazing of sheep. Neither by record or tradition is it known when the SOMERSHAM Water was discovered; the earliest account to be depended upon is, that the SOMERSHAM Water having been drank at the end of the last century, but afterwards neglected, was revived under the patronage of the late Right Rev. Dr. MORE, Lord Bishop of *Ely*,

Ely, who delighted much in the study of Natural History and Physic. Drs. ADDENBROOKE and ASHENHURST, of *Cambridge*, and Dr. FULLWOOD of *Huntingdon*, not only examined this water, but made use of it in their practice.

About fifty years ago, His Grace WILLIAM late Duke of MANCHESTER, the late Right Hon. EDWARD Lord Viscount HINCHINBROOK, Dr. WAKE, Lord Bishop of LINCOLN, with the chief of the Gentry and Clergy in the counties of *Cambridge* and *Huntingdon*, joined in a subscription for erecting a house near the spring; and by the indefatigable pains of the late Rev. Dr. SAMUEL KNIGHT, Prebendary of *Ely*, and Rector of *Bluntisham*, a house was fitted up, a bowling-green, and proper accommodations were made.

Many persons came to *St. Ives*, to SOMERSHAM, and to the pleasant villages of *Earith*, *Colne*, *Pidley*, *Woodburst*, and *Old Hurst*, to reside during the summer, and drink this Water: others sent for it to *Ely*, *Cambridge*, and even to some distant parts of *Lincolnshire* and *Norfolk*; where it was drank not only as a medicine, but at table
mixed

mixed with wine. Some having injudiciously drank the SOMERSHAM Water while they laboured under a fit of the Stone or Gravel, which proved fatal to them; a report was spread that this Water was productive of the Stone; all that could be said in defence of the Water by the Physicians, upon the strictest examination, was to no purpose; the torrent of prejudice could not be stemmed; the spring became totally neglected, and so few persons continued the use of the Water, that the attendant's profit being very small, the house fell to ruin; and lest it should become a harbour for loose people, the materials were all removed.

However, a good opinion was still entertained of the SOMERSHAM Water, from its manifest success in many families. Physicians of great eminence then practising at *Cambridge*, and some still in practice there, made experiments on this Water, and agreed in their opinion of the utility of it in several cases, but could not discover the least property in the Water of producing either Stone or Gravel. I have repeated the usual experiments on the Medicinal Waters in the county of *Huntingdon*, every season, from 1751 till 1761, with the greatest care, and have observed the SOMERSHAM Water
to

to act as a diuretic in cases of the Stone and Gravel, and without the least inconvenience, provided the urinary passages were not obstructed, and the patient was free from a fever. Nay more, I have been supplied with SOMERSHAM Water in *London* every year from 1762 to 1767, and have been enabled, not only to repeat all the experiments, but to have them confirmed in my presence, and in the most obliging manner, by Dr. MORRIS, whose letter to me will appear in the Philosophical Transactions. This Water had the same effect on human *Calculi* when brought to *London*, as it had at *Huntingdon*.

In 1758, the contents and virtues of the SOMERSHAM Water being communicated, a subscription was opened to erect a house, and proper accommodations, near the spring, according to the plan laid before the Committee by Mr. ESSEX, and approved of by them, each person subscribing One Guinea at least; and from the following List of Subscribers, a Committee was appointed for the management of the Subscription.



A

LIST of the SUBSCRIBERS

TO THE

SOMERSHAM SPA.

N.B. *The Gentlemen to whose Names an Asterism is prefixed, were of the Committee till the time of their decease.*

THE PRESENT COMMITTEE ARE,

Dingley Askham, Esq, *Chairman.*

Nicholas Bon-foy, Esq;	Dr. Layard
John Cole, Esq;	<i>The Rev. Mr. Manning</i>
<i>The Rev. Dr. Charles Dickens.</i>	Mr. Reade Peacock
<i>The Rev. Dr. Favell.</i>	Samuel Pratt, Esq;
Charles Greene, Esq;	Mr. Thomas Skeeles,
Mr. Thomas Johnson, <i>Steward.</i>	<i>Surgeon, Steward</i>
	John Thomson, Esq;

A

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Mr. Samuel Arch-
deacon, *Surgeon*
Dingley Askham,
Esq;
Robert Austen, Esq;
Mrs. Eliz. Akehurst
Mrs. Catherine Allix

B

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Knt. late Master of
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The Rev. John Bar-
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Mr. William Barnes,
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Cha. Boisragon, Esq;
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Powell Clough, Esq;
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The Rev. Allen Cow-
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beth Lady Carysfort
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D

D

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Bart. M. D. *Physi-*
cian to his Majesty

James Dargent, M. D.
Physician to the
Westminster - Hos-
pital

Mr. Richard Dawes,
Surgeon

Peter Descow, Esq;
The Rev. Charles
Dickens, L. L. D.

Francis Philip Duval,
M. D. *Physician to*
her Rcyal Highness
the Princess Dow-
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D. D. *Lord Bishop*
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The Rev. John Gooch,
D. D.

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Mr. Henry Gray

The Rev. Thomas
Greene, D. D. *Dean*
of Salisbury

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Mrs. Anna Maria

Gray
Mrs. Catherine Greene

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Lord Viscount Hin-

chinbrook
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dasyd
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Serjeant Surgeon to
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Pennel

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Tho. Houghton, Esq;
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L
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The Right Rev. John Thomas, D.D. *late Lord Bishop of Lincoln*
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Daniel Peter Layard, M.D. *Physician to her Royal Highness the Princess Dowager of Wales*

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Soame Jenyns, Esq;
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William Ingle, Esq;

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D. D. Master of
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rietta Layard
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Duke of Manches-
ter,
His Grace George
Duke of Manches-
ter.

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pital.
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chester
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ning
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Esq;
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ning, B.D.

N
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The Rev. George Nai-
lour, M.A.

O
The Rev. George
Oram, M.A.

O

*The Rev. George
Oram, M.A.*

8

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Bateman

Robson,

Esq;

P

S

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*M. D. Physician to
 Her Majesty*

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Samuel Pratt, Esq;

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Mr. Joseph Partridge,
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 nington, M.A.*

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 nington, jun. M.A.*

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 erell, M.A.*

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Mrs. Elizabeth Pen-
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R

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 nolds, L.L.D.*

Richard Reynolds,
 Esq;

John Earl of Sand-
 wich

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 M.A.*

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Surgeon

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Mr. Anthony South,
Surgeon

Mr. William Spence,
Surgeon

George Steevens, Esq;

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Sturges, M.A.

Thomas Sturges, Esq;
 Dorothy Countess of
 Sandwich

T

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 Tench, M.A.*

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Esq;

John Thomson, Esq;
The Rev. Clement
Tookie, M.A.

Mr. George Tookie,
Surgeon

Robert Cotton Tre-
fufis, Esq;

The Rev. Henry Trot-
ter, B.D.

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Trefufis

Miss Mary Thomson

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the British Lying-
in Hospital

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Williams, Bart.

Sir Clifton Wintring-
ham, Knt. M.D.
Physician to His
Majesty.

The Rev. James Wal-
ler, M.A.

Richard Warren,
M.D. *Physician to*
His Majesty.

Mr. Henry Watson,
Surgeon to the West-
minster Hospital

The Rev. William
Whitworth, M.A.

The Rev. William
Williams, M. A.

* Mr. George Wil-
liams

Benjamin Woodward,
Esq;

Mrs. Mary Warner

Mrs. Martha Weedon

Mrs. Susanna Wil-
liams

* * Such persons whose names are not come to hand, and are omitted in the foregoing list, shall be inserted in the next edition; and whoever is disposed to honor the subscription, are desired to give in their names, and places of abode, and to pay what they intend to contribute to any of the undermentioned persons, viz. To Mr. *Robert Parnell*, Apothecary, the corner of *Hatton-Garden* in *Holborn, London*; Mr. *Thomas Johnson*, Attorney at Law, and Mr. *Thomas Skeeles*, Surgeon and Apothecary, at *St. Ives*; Mr. *Henry Gray*, at *Godmanchester*; and Messrs. *Thurlbourn* and *Woodyer*, Booksellers in *Cambridge*, who will give printed receipts signed by the Stewards.

On the 19th of *May*, 1758, the Committee Ordered, that the subsequent RULES and REGULATIONS be the RULES and ORDERS for the Direction of the SOMERSHAM SPA.

RULES *and* ORDERS

For the Management of the

SOMERSHAM SPA.

I. **T**HAT from among the Gentlemen Subscribers, thirteen be chosen annually a Committee; the Proprietor and two Stewards always included. And of this number one to be elected Chairman, who shall preside at all meetings, unless a Peer or member of the House of Commons be present; and in case more than one be present, such Peer, or Member of the House of Commons, shall preside according to his rank, unless he declines it to the Chairman.

II. That the Committee shall meet at such times and place in *St. Ives* as they shall think necessary; and whenever a meeting is desired by the Proprietor or Stewards, a week's notice must be given by the Stewards.

III.

III. That the Committee shall have power from time to time, to form such regulations and orders for the use of the SPA as may render it effectual ; give orders for the erecting proper accommodations and conveniences ; settle with the Proprietor such a plan as shall appear most beneficial, and also audit the Stewards accounts.

IV. The Committee proposed by the Proprietor and Stewards on *Monday, April* the 3d, 1758, to continue till the first *Monday* in *April* 1759, and then be either continued, vacancies filled up, or others chose, as the majority shall think fit ; in which case the Proprietor, two Stewards, and four more of the preceding Committee to be continued.

V. That the Stewards appointed by the Subscribers, and approved of by the Proprietor, receive the subscriptions, inspect the repairs and improvements, pay the expences, and yearly give an account to the Subscribers of the preceding year's receipts and disbursements.

VI. That the Committee appoint a Clerk to attend them, to take the minutes, enter the orders in a book, send notice of meetings in writing, or to the *Cambridge* Paper, which Clerk shall deliver all papers, minute-book, &c. to the Stewards; and shall be allowed for

or such trouble such a fee at each meeting, as the Committee of Subscribers shall direct.

VIII. That the hours of attendance at the SPA, be from five o'clock in the morning till seven, for the poor ; and from seven till twelve at noon for other persons. That no gratuity be taken by any servant, or servants, from any poor person ; the servant in default to be immediately discharged. A certificate of the person being a proper object of charity, signed by the Minister of the Parish, or by some reputable person in that parish, is to be given to the servant.—Every person claiming, and having a right of Common on SOMERSHAM Heath, to have the Water *gratis* for their own use, on giving to the servant their names and places of abode. Subscribers to pay Five Shillings *per* season. Non-subscribers to pay Seven Shillings and Sixpence *per* season, or Twopence a quart. The servant to be paid out of the subscription Four Shillings a week, from the first of *May* to the first of *October*, unless the gratuities from the Water-drinkers render such payment unnecessary.

IX. That a licence be obtained for the servant or servants to sell wine, spirituous or malt liquors, when a proper house is fitted up for the reception of those who use the Water;

water; and leave be given to accommodate the company with tea, coffee, chocolate, medicinal tinctures, drops, salts, and other necessaries of use in such places; as also to dress any provisions, and entertain company, provided good hours be kept, and no rioting or debauchery of any sort be suffered. On any complaint of such irregularity, and that clearly proved, the servant to be discharged by the Proprietor.

X. That the Subscribers shall have the free use of the Bowling-Green, and of the Cold Bath when compleated, paying only some small gratuity to the person attending the Green, and what is usual at other Cold Baths to attendants.

XI. That an alphabetical list of the Subscribers, and one of the Commoners, as also a table of the Rules and Orders, be kept at the SPA for public inspection.

XII. That for promoting the good effects, and more extensive use of this water, such persons who are inclined be desired to communicate to the Proprietor (under cover directed to one of the Stewards) the benefit they have received, which shall either be mentioned, or represented with such caution, as not to expose the person relieved, should they enjoin secrecy.

DIREC.

DIRECTIONS *for the* DRINKING

THE

SOMERSHAM WATER.

THE SOMERSHAM Water is a Chalybeate Water, strongly impregnated with the vitriol of iron and allum. It is much stronger in dry than in wet seasons; is to be drank at the spring-head from the beginning of *May* to the beginning of *October*; will bear carriage to any distance; and can be kept a long while, even years, if bottled carefully, at a proper season; also it may be drank at any time of the year, if directed.

In whatever manner the SOMERSHAM Water is prescribed, whether to be drank pure, at the spring-head, or at a distance; or when mixed with milk, or made into whey with milk; it will always be proper to purge before the person begins to drink it. The physician must direct what sort of purge will best suit his patient, according to the nature of the complaint. Such who do not require any particular treatment, may take half an ounce of *Rochelle* salts, dissolved

solved in a wine glass of the SOMERSHAM Water, warmed by pouring some hot pure spring water into the glass, to prevent the SOMERSHAM Water and the salts from chilling the drinker. Preserved Carraway, or Cardamom seeds or Orange peel, may then be eaten, and the person must either walk or ride gently, but neither apply to reading, writing, or working, in a sitting posture; for a giddiness would come on, as I have often experienced, having purposely tried several times the effects of application to read, or write, immediately after drinking the SOMERSHAM Water, and have constantly had a swimming of my head; which, however, has been carried off instantly, upon walking into the open air; but then the Water will be apt to turn the stomach sick, and to work off by stool. — I must acquaint my readers, that it is the property of most Chalybeate Waters to tinge the stools black, so that they should not be alarmed at such an appearance from drinking the SOMERSHAM Water.

About half an hour after the first glass a second may be drank, and a third half an hour afterwards, always mixing some hot water to warm the Chalybeate Water; after the third glass, the person may breakfast as usual

usual with tea, coffee, or thin chocolate bread, and butter, dry toasted bread, or biscuits, avoiding particularly to eat hot bread. The next day after purging, the course of drinking may begin, and be continued three weeks or a month, purging at the end of that time as before; and may be pursued afresh, or reassumed, towards autumn, or left off entirely, as may be necessary.

In the afternoon, should the case require it, the patient may drink a glass or two, taking proper exercise; and after dinner, a wine glass full, or two, may be of use mixed with wine; but then great care must be had not to eat such heavy, greasy, or slimy food, as may disorder the stomach; nor to overload it.

I must caution my readers not to drink the SOMERSHAM Water whenever there are acidities in the stomach, which will be known by the sour risings from the stomach into the mouth; should a medicinal Water be necessary, they will prefer *Bristol, Bath, Tilbury*, or *Tunbridge Waters*, as most likely to correct those acidities which the SOMERSHAM Water would increase.

As to the quantity to be drank, generally three glasses, holding each a quarter of a pint, and at the above-mentioned distances are sufficient; but some persons can bear even half a pint, or more at a draught, while others cannot, nor should not drink so much as a quarter of a pint.

The Waters may also be directed to be drank mixed with warm milk from the ass or cow, or made into whey, by boiling the Chalybeate Water with the same quantity of milk, and carefully straining the whey from the curd. In several cases, but particularly consumptive persons; I have found the benefit of such mixtures. This whey doth not require that the patient should take so much exercise as when the Water is only mixed with milk, or drank by itself.

When the Water is carried to any distance, an ochry sediment is to be seen at the bottom of the bottle, which fouls the Water on pouring it out; the way to drink it clear, and agreeably, is to pour the Chalybeate Water into the glass through a very fine linnen cloth, and it will then have its usual transparency and sparkling. But, when
at

at a distance, whey is required, there will be no need of straining, till the whey is made; so that the Water, though shaken and foul, may be mixed, and boiled with the milk.

The use of the SOMERSHAM Water will not prevent the continuance of such medicines as the Physician may think suitable to his patient. In many cases they will assist each other,

Notwithstanding this kingdom is providentially watered with various springs of great utility, this Chalybeate Water is the only one of the kind yet discovered: like every good medicine, this powerful Water, is neither proper for all constitutions, or all disorders: it will, therefore, be indispensably necessary for the sick to consult their Physician before they venture to drink improperly a water, whose contents might prove contrary, if not hurtful to them; for it may so happen to those Physicians, as it has to me, instead of recommending the SOMERSHAM Water, to send patients to *Bristol, Bath, Tunbridge, Scarborough*, and to other Waters, as more suitable in their complaints.

I shall now only add in what diseases I have chiefly found the SOMERSHAM Water efficacious. In debilities of the stomach and bowels; in dysenteries, hæmorrhoids, and worms; in nidorose crudities of the stomach; but not in acid, which *Bristol, Tilbury, and Tunbridge* Water will remove. In obstructions of the liver and spleen, in jaundices in adults. In uterine complaints, schirrus, cancers, hæmorrhages, obstructions, the fluor albus, and after abortion promoting conception. In the stone and gravel, gonorrhœa, weakness, ulcers in the bladder, and diabetes. In hysteric and hypochondriac affections. In a *marasmus*, in consumptions from a scorbutic habit of body; in the scurvy, rheumatic pains, and some gouty persons. Externally applied to foul ulcers and cancers.

The SOMERSHAM Water is not to be recommended to persons who are troubled with the vertigo; in all *asthma*s, except the spasmodic, from an hysteric or hypochondriacal cause; nor in the *anasarca*, or tympany; or to such persons, who, through age or bulk, cannot take sufficient exercise, or have swelled legs. The Water is cautiously to be advised in obstructions of the
menfes,

menfes, in plethoric constitutions, and absolutely forbid as hurtful, until proper evacuations have been made.

This is, although imperfect, the whole account I could communicate at present, which I hope will prove neither useless or unsatisfactory to my readers.

*** The SOMERSHAM Water is to be had at Mr. *Robert Parnell's*, Apothecary, the Corner of *Hatton-Garden* in *Holborn*, and no where else in *London*.





